



**SAFETY DATA SHEET**  
Phosphorus Pentoxide (All Grades)

**SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION**

**SDS Number:** M631                      **Effective Date:** May 6, 2014                      **Supersedes:** March 3, 2011

**Product Name:** Phosphorus Pentoxide (All Grades)  
**Synonyms:** Phosphorus Oxide (P2O5)  
Diphosphorus Pentoxide

**Product Codes:** SMC Spec. 630, Spec. 631, Spec. 632, Spec. 633  
**Product Description:** White Soft Powder, Odorless

**Recommended Use:** Chemical processing  
**Restrictions on Use:** None determined

**Company Identification:** Special Materials Company  
70 West 40th Street  
New York, New York 10018

**Phone:** (646) 366-0400  
**Fax:** (646) 366-0595

**CHEMTREC (emergency):** 800-424-9300                      **Outside USA:** (703) 527-3887

**SECTION 2 – HAZARDS IDENTIFICATION**

**Classification of the substance**

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)  
Acute toxicity, Inhalation (Category 2)  
Skin corrosion (Category 1A)  
Serious eye damage (Category 1)

**Label elements**

**Hazard statement(s)**

H314 Causes severe skin burns and eye damage.  
H330 Fatal if inhaled.  
EUH014 Reacts violently with water.

**Precautionary statement(s)**

P260 Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.  
P264 Wash skin thoroughly after handling.  
P271 Use only outdoors or in a well-ventilated area.  
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.  
P284 Wear respiratory protection.  
P301 + P330 + P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.  
P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.  
P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.  
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove



**SAFETY DATA SHEET**  
Phosphorus Pentoxide (All Grades)

contact lenses, if present and easy to do. Continue rinsing.  
P310 Immediately call a POISON CENTER or doctor/ physician.  
P363 Wash contaminated clothing before reuse.  
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.  
P405 Store locked up.  
P501 Dispose of contents/ container to an approved waste disposal plant.

**Hazard Pictograms**



**Signal word** Danger

**Other Hazards** Reacts violently with water.

**EMERGENCY OVERVIEW**

Granular powder reacts violently with water. Corrosive, airborne dust particles are harmful and corrosive to respiratory tract. Contact with skin may cause chemical burns. Contact with eyes may cause severe irritation and chemical burns. Hazard symbols for this product: C. Risk Phrases - R 35

**POTENTIAL HEALTH EFFECTS**

**INHALATION**

Toxic if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract. Breathing airborne particles or dust from mixing, spraying, sanding, grinding, etc. may cause severe irritation to respiratory tract.

**SKIN**

Contact may cause severe irritation and painful burns on exposed skin.

**EYES**

Contact with eyes will cause severe irritation and painful burns to eyes. Highly corrosive to eyes.

**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.

**CARCINOGENICITY**

NTP? No

IARC MONOGRAPHS? No

OSHA REGULATED? No



**SECTION 3 – COMPOSITION / INFORMATION ON INGREDIENTS**

CAS#/ EINECS No.	HAZARDOUS COMPONENTS	%( by weight)	OSHA PEL		ACGIH TWA		SARA TITLE III	RQ LBS
			PPM	MG/M3	PPM	MG/M3		
1314-56-3 / 215-236-1	Phosphorus Pentoxide	99.5 - 100	Not established					

The EU has established an OEL of 1 mg/m<sup>3</sup> (TWA)

**SECTION 4 – FIRST AID MEASURES**

**Most Important Symptoms**

Toxic if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract. Breathing airborne particles or dust from mixing, spraying, sanding, grinding, etc. may cause severe irritation to respiratory tract.

**Special Treatment**

Treat symptomatically.

**Inhalation**

Remove affected person to fresh air; wash mouth and nasal passages with water repeatedly; if breathing difficulties persist seek medical attention.

**Skin**

Remove contaminated clothing; flush affected area with water; launder contaminated clothing before reuse; if irritation persists, seek medical attention.

**Eyes**

Remove contact lenses. Flush eyes with clear running water for 15 minutes while holding eyelids open; seek immediate medical attention.

**Ingestion**

Give large quantities of milk or water; DO NOT induce vomiting. Never give anything by mouth to an unconscious person; seek medical attention.

**SECTION 5 – FIRE FIGHTING MEASURES**

**General fire hazards**

Product is not considered flammable or combustible. Products of combustion include compounds of hydrogen, phosphorus and oxygen and toxic fumes.

**Extinguishing media**

**Suitable extinguishing media**

Carbon dioxide, dry chemical, chemical foam. Do not use water.



**Unsuitable extinguishing media**

Water

**Special hazards arising from the substance or mixture**

Product reacts violently with water. May release toxic and irritating fumes upon thermal decomposition.

**Advice for firefighters**

**Special firefighting procedures**

Runoff may cause pollution. Use media appropriate for the surrounding fire.

**Special protective equipment for fire-fighters**

Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

**Hazardous Combustion Products**

Products of combustion include compounds of hydrogen, phosphorus and oxygen and toxic fumes.

**SECTION 6 – ACCIDENTAL RELEASE MEASURES**

**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED**

Caution - CORROSIVE. Recover and segregate product for reuse; shovel product into approved container for disposal.

**Personal precautions**

Use personal protective equipment. Avoid breathing dust, fumes, and vapor. Ensure adequate ventilation. Evacuate personnel to safe areas.

**Environmental precautions**

Do not let product enter drains.

**Methods and materials for containment and cleaning up**

Contain spills then collect then pick up and place in container for disposal according to local regulations. Do not flush with water

**SECTION 7 – HANDLING AND STORAGE**

**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE**

Keep container closed when not in use; protect containers from abuse; protect from extreme temperatures. Store in cool, dry area. CAUTION - material is corrosive. Keep this and other chemicals out of reach of children.

**Precautions for safe handling**

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed.

**Conditions for safe storage**

Store under inert gas if appropriate. Keep container tightly closed in a dry and well-ventilated place. Keep away from water. Never allow product to get in contact with water during storage. Air and moisture sensitive.



**SECTION 8 – EXPOSURE CONTROLS / PERSONAL PROTECTION**

**ENGINEERING CONTROLS:**

The use of local exhaust ventilation and airborne particle collection is recommended. Use corrosion-resistant ventilation equipment.

**PERSONAL PROTECTION:**

**RESPIRATORY PROTECTION (SPECIFY TYPE):**

NIOSH approved respirator designed to remove airborne particulate present in excess of maximum allowable concentrations due to secondary operations such as mixing, spraying, sanding, buffing, etc. Refer to 29 CFR 1910.134 or European Standard EN 149 for regulations.

**PROTECTIVE GLOVES:**

Neoprene gloves, butyl or nitrile rubber gloves with cuffs.

**EYE PROTECTION:**

Protective eyeglasses or chemical safety goggles. Refer to 29 CFR 1910.133 or European Standard EN166.

**OTHER PROTECTIVE CLOTHING OR EQUIPMENT:**

Coverall, apron, or other equipment should be worn to minimize skin contact, safety eyewash station nearby.

**WORK / HYGIENIC PRACTICES:**

Practice safe workplace habits. Minimize body contact with this, as well as all chemicals in general.

**SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES**

<b>Appearance</b>	White crystalline powder
<b>Odor</b>	No data available
<b>Odor threshold</b>	No data available
<b>pH</b>	1.5 (10 g/L @ 20°C)
<b>Melting point</b>	340°C
<b>Initial boiling point</b>	Not applicable
<b>Flash point</b>	Not applicable
<b>Evaporation rate</b>	Not applicable
<b>Flammability</b>	Not applicable
<b>Vapor pressure</b>	10 mm Hg @ 238°C
<b>Vapor density (Air=1)</b>	Not applicable
<b>Relative density</b>	2.3 g/mL at 25 °C (77 °F)
<b>Solubility</b>	Reacts violently with water
<b>Partition coefficient:</b>	
<b>n-octanol/water</b>	No data available
<b>Auto-ignition</b>	
<b>Temperature</b>	No data available
<b>Decomposition</b>	
<b>Temperature</b>	No data available
<b>Viscosity</b>	Solid



**SECTION 10 – STABILITY AND REACTIVITY**

**Reactivity**

Reacts violently with water

**Chemical stability**

Stable under recommended storage conditions.

**Possibility of hazardous reactions**

Reacts violently with water

**Conditions to avoid**

Avoid water, moisture; generating airborne dust.

**Incompatible materials**

Water, organic compounds, sodium, potassium, ammonia, peroxides, magnesium, alcohols, metals, oxidizing agents. Reaction with 95% formic acid causes 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.

**Hazardous decomposition products**

Decomposition will not occur if handled and stored properly. In case of a fire, compounds of hydrogen, phosphorus, oxygen and toxic fumes and smoke may be produced.

**SECTION 11 – TOXICOLOGICAL INFORMATION**

**Acute toxicity**

**LD50 Oral:** No data available  
**LD50 Dermal:** No data available  
**LC50 Inhalation:** 0.3mg/L/4H (Smoke) rat

**Skin corrosion/irritation**

**Skin – rabbit:** No data available

**Serious eye damage/eye irritation**

**Eyes – rabbit:** No data available

**Respiratory or**

**skin sensitization:** No data available

**Germ cell mutagenicity:** No data available

**Reproductive toxicity:** No data available

**Specific target organ**

**toxicity - single exposure:** No data available.

**Specific target organ toxicity**

**- repeated exposure:** No data available.



**SAFETY DATA SHEET**  
Phosphorus Pentoxide (All Grades)

**Aspiration hazard:** No data available

**Carcinogenicity**

No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

**Likely routes of exposure:** Inhalation, skin contact, and ingestion

**Potential health effects**

**INHALATION**

Toxic if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract. Breathing airborne particles or dust from mixing, spraying, sanding, grinding, etc. may cause severe irritation to respiratory tract.

**SKIN**

Contact may cause severe irritation and painful burns on exposed skin.

**EYES**

Contact with eyes will cause severe irritation and painful burns to eyes. Highly corrosive to eyes.

**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.

**Signs and Symptoms of Exposure**

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

**SECTION 12 – ECOLOGICAL INFORMATION**

**Toxicity**

Toxicity to fish: No data available  
Toxicity to aquatic invertebrates: No data available

**Persistence and degradability** No data available

**Bio accumulative potential** No data available

**Mobility in soil** No data available

**Results of PBT and vPvB assessment** No data available

**Other adverse effects**

No data are available on the adverse effects of this material on the environment. Neither COD nor BOD data are available. Phosphorous Pentoxide will react with water in the environment to ultimately yield phosphoric acid. This material is not classified as a Marine Pollutant.

**SECTION 13 – DISPOSAL CONSIDERATIONS**

**WASTE DISPOSAL METHOD:** METHOD: Dispose of in accordance with Local, State, and Federal Regulations. Product is classified as non - hazardous, however, non-hazardous materials may become hazardous waste upon contact with other products. Refer to "40 CFR Protection of Environment Parts 260 - 299" for complete waste disposal regulations.



**SAFETY DATA SHEET**  
Phosphorus Pentoxide (All Grades)

Consult your local, state, or Federal Environmental Protection Agency before disposing of any chemicals.

**SECTION 14 – TRANSPORT INFORMATION**

**Proper Shipping Name:** Phosphorus Pentoxide

**DOT Hazard Class / Pack Group:** 8 / II

**IATA Hazard Class / Pack Group:** 8 / II

**Reference:** 49 CFR 173.154, .212, .240

**IMDG Hazard Class:** 8 / II

**UN/NA Identification Number:** UN 1807

**RID/ADR Dangerous Goods Code:** 8

**Label:** Corrosive

**UN TDG Class / Pack Group:** 8 / II

**Hazard Symbols:** C

**Hazard Identification Number (HIN):** 80

Note: Transportation information provided is for reference only. Client is urged to consult CFR 49 parts 100 - 177, IMDG, IATA, EC, United Nations TDG, and WHMIS (Canada) TDG information manuals for detailed regulations and exceptions covering specific container sizes, packaging materials and methods of shipping.

**SECTION 15 – REGULATORY INFORMATION**

**TSCA (Toxic Substance Control Act)**

All components of this product are listed on the U.S. Toxic Substances Control Act Chemical Inventory (TSCA Inventory) or are exempted from listing because a Low Volume Exemption has been granted in accordance with 40 CFR 723.50.

**SARA Title III (Superfund Amendments and Reauthorization Act)**

311/312 Hazard Categories.

Immediate health

313 Reportable Ingredients:

None

**CERCLA (Comprehensive Response Compensation and Liability Act)**

None

**California Prop 65, Safe Drinking Water and Toxic Enforcement Act of 1986**

There are no reportable chemicals present known to the state of California to cause cancer or reproductive toxicity.

**CPR (Canadian Controlled Products Regulations)**

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations. WHMIS Classification: E, D2B.

**IDL (Canadian Ingredient Disclosure List)**

Components of this product identified by CAS number and listed on the Canadian Ingredient Disclosure List are shown in Section 2.






**SAFETY DATA SHEET**  
Phosphorus Pentoxide (All Grades)

**DSL / NDSL (Canadian Domestic Substances List / Non-Domestic Substances List)**

Components of this product identified by CAS number are listed on the DSL or NDSL, or are otherwise in compliance with the New Substances Notification (NSN) regulations. Only ingredients classified as "hazardous" are listed in Section 2 unless otherwise indicated.

**EINECS (European Inventory of Existing Commercial Chemical Substances)**

Components of this product identified by CAS numbers are on the European Inventory of Existing Commercial Chemical Substances.

EC Risk Phrases	Symbol (s) Required For Label	EC Safety Phrases
R35 Causes severe burns	Corrosive 	<b>S22</b> Do not breathe dust <b>S26</b> In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. <b>S45</b> In case of accident or if you feel unwell, seek medical advice immediately (show the label whenever possible.)

**SECTION 16 – OTHER INFORMATION**

Specific toxicity tests have not been conducted on this product. Our hazard evaluation is based on Information from similar products, the ingredients, technical literature, and/or professional experience.

HMIS HAZARD RATINGS	Health	3	*= Chronic Health Hazard	2= Moderate
	Flammability	0	0= Insignificant	3= High
	Physical Hazard	3	1= Slight	4= Extreme

Personal Protective Equipment F Safety glasses, Gloves, Apron, Dust Respirator

**Revision Summary**

This SDS has been revised in the following sections: 1, 3, 5, 9, 10 and 12.

SDS Prepared by: Special Materials Company  
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The information contained herein is believed to be accurate but is not warranted to be so. Data and calculations are based on information furnished by the manufacturer of the product and manufacturers of the components of the product. Users are advised to confirm in advance of need that information is current, applicable and suited to the circumstances of use. Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Furthermore, vendor assumes no responsibility for injury caused by abnormal use of this material even if reasonable safety procedures are followed. Any questions regarding this product should be directed to the manufacturer of the product as described in Section 1.