

Phosphorous Pentoxide (All Grades)

Safety Data Sheet M631

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 01/27/2021

Supersedes: 06/20/2018

SECTION 1: Identification

1.1. Identification

Product form	: Substance
Trade name	: Phosphorous Pentoxide (All Grades)
Chemical name	: Phosphorous Pentoxide
CAS No	: 1314-56-3
Product code	: 630, 631, 632, 633
Formula	: P ₂ O ₅
Synonyms	: diphosphorus pentaoxide / diphosphorus pentoxide / phosphoric acid, anhydride / phosphoric anhydride / phosphoric pentoxide / phosphorous pentoxide / phosphorus anhydride / phosphorus oxide (=phosphorus pentoxide) / phosphorus oxide (P ₂ O ₅) / phosphorus pentaoxide / Phosphorus pentoxide / phosphorus(V) oxide / POX (= phosphorus pentoxide)
BIG no	: 10326

1.2. Recommended use and restrictions on use

Use of the substance/mixture	: Chemical raw material Chemical intermediate Adhesive: auxiliary substance Catalyst Laboratory chemical
Recommended use	: Industrial uses: Uses of substances as such or in preparations at industrial sites
Restrictions on use	: Not determined

1.3. Supplier

Special Materials Company
70 West 40th Street, 2nd Floor
New York, NY 10018
Ph: (646) 366-0400
Fax: (646) 366-0595

1.4. Emergency telephone number

Emergency number : CHEMTREC - (800) 424-9300 | Outside the US: 011 (703) 527-3887

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture


GHS-US classification

Skin corrosion/irritation Category 1A	H314	Causes severe skin burns and eye damage
Acute toxicity (inhalation) Category 2	H330	Fatal if inhaled

Full text of H statements : see section 16

2.2. GHS Label elements, including precautionary statements

GHS-US labeling

Hazard pictograms (GHS-US)	:	
Signal word (GHS-US)	:	Danger
Hazard statements (GHS-US)	:	H314 - Causes severe skin burns and eye damage H330 - Fatal if inhaled
Precautionary statements (GHS-US)	:	P260 - Do not breathe dust, fume P264 - Wash hands, forearms and face thoroughly after handling P280 - Wear eye protection, face protection, protective clothing, protective gloves P271 - Use only outdoors or in a well-ventilated area P284 - Respiratory protection P301+P330+P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting

Phosphorous Pentoxide (All Grades)

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

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 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
P405 - Store locked up
P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation

2.3. Other hazards which do not result in classification

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Substance type : Mono-constituent

Name	Product identifier	%	GHS-US classification
phosphorus pentoxide (Main constituent)	(CAS No) 1314-56-3	99.5 - 100	Skin Corr. 1A, H314 Acute Tox. 2 (Inhalation), H330

Full text of hazard classes and H-statements : see section 16

3.2. Mixtures

Not applicable

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general : Call a physician immediately.
First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing.
First-aid measures after skin contact : Rinse skin with water/shower. Remove/Take off immediately all contaminated clothing. Call a physician immediately.
First-aid measures after eye contact : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician immediately.
First-aid measures after ingestion : Rinse mouth. Do not induce vomiting. Call a physician immediately.

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/injuries after inhalation : Coughing. Respiratory difficulties. Corrosion of the upper respiratory tract. FOLLOWING SYMPTOMS MAY APPEAR LATER: Risk of lung oedema.
Symptoms/injuries after skin contact : Burns.
Symptoms/injuries after eye contact : Serious damage to eyes.
Symptoms/injuries after ingestion : Burns.

4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Dry powder.
Unsuitable extinguishing media : EXTINGUISHING MEDIA FOR SURROUNDING FIRES: Water. Foam.

5.2. Specific hazards arising from the chemical

Fire hazard : DIRECT FIRE HAZARD. Non combustible. INDIRECT FIRE HAZARD. Reactions involving a fire hazard: see "Reactivity Hazard".
Explosion hazard : INDIRECT EXPLOSION HAZARD. Reactions with explosion hazards: see "Reactivity Hazard".

Phosphorous Pentoxide (All Grades)

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Reactivity	: Violent exothermic reaction with water (moisture): release of corrosive products. Reacts on exposure to water (moisture) with combustible materials: risk of spontaneous ignition. Reacts on exposure to water (moisture) with (some) metals: release of highly flammable gases/vapours (hydrogen). On heating/burning: release of toxic and corrosive gases/vapours (phosphorus oxides). Reacts exothermically with (strong) oxidizers: (increased) risk of fire/explosion. Reacts exothermically with organic material: risk of spontaneous ignition. Reacts exothermically with many compounds e.g.: with (some) acids/bases, with oxygen compounds, with (some) halogens compounds and with alcohols.
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5.3. Special protective equipment and precautions for fire-fighters

Precautionary measures fire	: Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to fire/heat: have neighbourhood close doors and windows.
Firefighting instructions	: Cool tanks/drums with water spray/remove them into safety. When cooling/extinguishing: no water in the substance.
Protection during firefighting	: Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Protective equipment	: Gloves. Face-shield. Dust cloud production: compressed air/oxygen apparatus. Corrosion-proof suit. See "Material-Handling" to select protective clothing.
Emergency procedures	: Ventilate spillage area. Avoid contact with skin and eyes. Do not breathe dust/fume/gas/mist/vapors/spray.
Measures in case of dust release	: In case of dust production: keep upwind. In case of dust production: consider evacuation. Dust production: have neighbourhood close doors and windows.

6.1.2. For emergency responders

Protective equipment	: Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".
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6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

For containment	: Contain released substance, pump into suitable containers. Plug the leak, cut off the supply. Dam up the solid spill. Hazardous reaction: measure explosive gas-air mixture. Reaction: dilute combustible gas/vapour with water curtain. Knock down/dilute dust cloud with water spray. Take account of toxic/corrosive precipitation water.
Methods for cleaning up	: Recover mechanically the product.
Other information	: Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	: Ensure good ventilation of the work station. Avoid contact with skin and eyes. Do not breathe dust/fume/gas/mist/vapors/spray. Wear personal protective equipment.
Hygiene measures	: Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions	: Store locked up. Store in a well-ventilated place. Keep cool.
Heat-ignition	: KEEP SUBSTANCE AWAY FROM: heat sources.
Information on mixed storage	: KEEP SUBSTANCE AWAY FROM: combustible materials. oxidizing agents. reducing agents. (strong) acids. (strong) bases. metals. halogens. organic materials. alcohols. water/moisture.
Storage area	: Store in a dry area. Ventilation at floor level. Keep locked up. Unauthorized persons are not admitted. May be stored under nitrogen. Meet the legal requirements.
Special rules on packaging	: SPECIAL REQUIREMENTS: hermetical. watertight. dry. clean. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.
Packaging materials	: SUITABLE MATERIAL: No data available. MATERIAL TO AVOID: No data available.

Phosphorous Pentoxide (All Grades)

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No additional information available

8.2. Appropriate engineering controls

Appropriate engineering controls : Ensure good ventilation of the work station.

Environmental exposure controls : Avoid release to the environment.

8.3. Individual protection measures/Personal protective equipment

Materials for protective clothing:

GIVE GOOD RESISTANCE: butyl rubber. chlorinated polyethylene. natural rubber. neoprene. nitrile rubber. polyethylene. PVC. viton. GIVE POOR RESISTANCE: PVA

Hand protection:

Gloves

Eye protection:

Safety glasses

Skin and body protection:

Corrosion-proof clothing. In case of dust production: head/neck protection

Respiratory protection:

Dust production: dust mask with filter type P3. High dust production: self-contained breathing apparatus

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Solid
Appearance	: Crystalline solid. Crystalline powder.
Color	: Colourless to white
Odor	: Almost odourless
Odor threshold	: No data available
pH	: 1 (0.5 %)
pH solution	: 0.5 %
Melting point	: 340 °C
Freezing point	: Not applicable
Boiling point	: No data available
Flash point	: Not applicable
Relative evaporation rate (butyl acetate=1)	: No data available
Flammability (solid, gas)	: Non flammable.
Vapor pressure	: < 0.1 hPa (20 °C)
Vapor pressure at 50 °C	: < 1 hPa (50 °C)
Relative vapor density at 20 °C	: 4.9
Relative density	: Not applicable
Specific gravity / density	: 2390 kg/m ³
Molecular mass	: 141.9 g/mol
Solubility	: Reacts with water. Soluble in sulfuric acid.
Log Pow	: No data available
Auto-ignition temperature	: Not applicable
Decomposition temperature	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosion limits	: Not applicable

Phosphorous Pentoxide (All Grades)

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Explosive properties : No data available
Oxidizing properties : No data available

9.2. Other information

Minimum ignition energy : Not applicable
SADT : Not applicable
Sublimation point : 360 °C
VOC content : Not applicable
Other properties : Gas/vapour heavier than air at 20°C. Hygroscopic. May sublime. Substance has acid reaction.

SECTION 10: Stability and reactivity

10.1. Reactivity

Violent exothermic reaction with water (moisture): release of corrosive products. Reacts on exposure to water (moisture) with combustible materials: risk of spontaneous ignition. Reacts on exposure to water (moisture) with (some) metals: release of highly flammable gases/vapours (hydrogen). On heating/burning: release of toxic and corrosive gases/vapours (phosphorus oxides). Reacts exothermically with (strong) oxidizers: (increased) risk of fire/explosion. Reacts exothermically with organic material: risk of spontaneous ignition. Reacts exothermically with many compounds e.g.: with (some) acids/bases, with oxygen compounds, with (some) halogens compounds and with alcohols.

10.2. Chemical stability

Unstable on exposure to moisture.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

No additional information available

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified
Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Inhalation: Fatal if inhaled.
Skin corrosion/irritation : Causes severe skin burns and eye damage.
pH: 1 (0.5 %)
Serious eye damage/irritation : Eye damage, category 1, implicit
pH: 1 (0.5 %)
Respiratory or skin sensitization : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified

Phosphorous Pentoxide (All Grades) (1314-56-3)

IARC group	Not listed
National Toxicology Program (NTP) Status	Not listed

Reproductive toxicity : Not classified
Specific target organ toxicity – single exposure : Not classified
Specific target organ toxicity – repeated exposure : Not classified
Aspiration hazard : Not classified
Viscosity, kinematic : No data available
Likely routes of exposure : Ingestion. Inhalation. Skin and eye contact.
Symptoms/injuries after inhalation : Coughing. Respiratory difficulties. Corrosion of the upper respiratory tract. FOLLOWING SYMPTOMS MAY APPEAR LATER: Risk of lung oedema.
Symptoms/injuries after skin contact : Burns.

Phosphorous Pentoxide (All Grades)

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Symptoms/injuries after eye contact : Serious damage to eyes.
Symptoms/injuries after ingestion : Burns.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : Before neutralisation, the product may represent a danger to aquatic organisms.
Ecology - air : Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009).
Ecology - water : Mild water pollutant (surface water). pH shift. Insufficient data available on ecotoxicity.

12.2. Persistence and degradability

Phosphorous Pentoxide (All Grades) (1314-56-3)	
Persistence and degradability	Biodegradability: not applicable.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable

12.3. Bioaccumulative potential

Phosphorous Pentoxide (All Grades) (1314-56-3)	
Bioaccumulative potential	No bioaccumulation data available.

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.
Product/Packaging disposal recommendations : Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Recycle/reuse. Immobilize the toxic or harmful components. Precipitate/make insoluble. Remove to an authorized dump (Class I). Treat using the best available techniques before discharge into drains or the aquatic environment.
Additional information : LWCA (the Netherlands): KGA category 06. Hazardous waste according to Directive 2008/98/EC.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Transport document description : UN1807 Phosphorus pentoxide, 8, II
UN-No.(DOT) : UN1807
Proper Shipping Name (DOT) : Phosphorus pentoxide
Class (DOT) : 8 - Class 8 - Corrosive material 49 CFR 173.136
Packing group (DOT) : II - Medium Danger
Hazard labels (DOT) : 8 - Corrosive



DOT Packaging Non Bulk (49 CFR 173.xxx) : 212
DOT Packaging Bulk (49 CFR 173.xxx) : 240

Phosphorous Pentoxide (All Grades)

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

DOT Special Provisions (49 CFR 172.102)	: A7 - Steel packaging must be corrosion-resistant or have protection against corrosion. IB8 - Authorized IBCs: Metal (11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N); Rigid plastics (11H1, 11H2, 21H1, 21H2, 31H1 and 31H2); Composite (11HZ1, 11HZ2, 21HZ1, 21HZ2, 31HZ1 and 31HZ2); Fiberboard (11G); Wooden (11C, 11D and 11F); Flexible (13H1, 13H2, 13H3, 13H4, 13H5, 13L1, 13L2, 13L3, 13L4, 13M1 or 13M2). IP2 - When IBCs other than metal or rigid plastics IBCs are used, they must be offered for transportation in a closed freight container or a closed transport vehicle. IP4 - Flexible, fiberboard or wooden IBCs must be sift-proof and water-resistant or be fitted with a sift-proof and water-resistant liner. N34 - Aluminum construction materials are not authorized for any part of a packaging which is normally in contact with the hazardous material. T3 - 2.65 178.274(d)(2) Normal..... 178.275(d)(2) TP33 - The portable tank instruction assigned for this substance applies for granular and powdered solids and for solids which are filled and discharged at temperatures above their melting point which are cooled and transported as a solid mass. Solid substances transported or offered for transport above their melting point are authorized for transportation in portable tanks conforming to the provisions of portable tank instruction T4 for solid substances of packing group III or T7 for solid substances of packing group II, unless a tank with more stringent requirements for minimum shell thickness, maximum allowable working pressure, pressure-relief devices or bottom outlets are assigned in which case the more stringent tank instruction and special provisions shall apply. Filling limits must be in accordance with portable tank special provision TP3. Solids meeting the definition of an elevated temperature material must be transported in accordance with the applicable requirements of this subchapter.
DOT Packaging Exceptions (49 CFR 173.xxx)	: 154
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	: 15 kg
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	: 50 kg
DOT Vessel Stowage Location	: A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel.
Emergency Response Guide (ERG) Number	: 137
Other information	: No supplementary information available.

TDG

Transport by sea

Transport document description (IMDG)	: UN 1807 PHOSPHORUS PENTOXIDE, 8, II
UN-No. (IMDG)	: 1807
Proper Shipping Name (IMDG)	: PHOSPHORUS PENTOXIDE
Class (IMDG)	: 8 - Corrosive substances
Packing group (IMDG)	: II - substances presenting medium danger
Limited quantities (IMDG)	: 1 kg
EmS-No. (1)	: F-A
EmS-No. (2)	: S-B

Air transport

Transport document description (IATA)	: UN 1807 Phosphorus pentoxide, 8, II
UN-No. (IATA)	: 1807
Proper Shipping Name (IATA)	: Phosphorus pentoxide
Class (IATA)	: 8 - Corrosives
Packing group (IATA)	: II - Medium Danger

SECTION 15: Regulatory information

15.1. US Federal regulations

Phosphorous Pentoxide (All Grades) (1314-56-3)	
CERCLA RQ	None to our knowledge
RQ (Reportable quantity, section 304 of EPA's List of Lists)	None to our knowledge
SARA Section 302 Threshold Planning Quantity (TPQ)	None to our knowledge
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard

Phosphorous Pentoxide (All Grades)

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory except for:

phosphorus pentoxide	CAS No 1314-56-3	100%
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15.2. International regulations

CANADA

No additional information available

EU-Regulations

No additional information available

National regulations

No additional information available

15.3. US State regulations

No additional information available

SECTION 16: Other information

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Full text of H-phrases:

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

NFPA health hazard

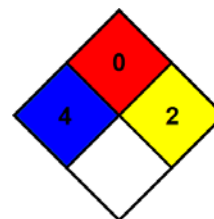
: 4 - Very short exposure could cause death or serious residual injury even though prompt medical attention was given.

NFPA fire hazard

: 0 - Materials that will not burn.

NFPA reactivity

: 2 - Normally unstable and readily undergo violent decomposition but do not detonate. Also: may react violently with water or may form potentially explosive mixtures with water.



HMIS III Rating

Health : 3 Serious Hazard - Major injury likely unless prompt action is taken and medical treatment is given

Flammability : 0 Minimal Hazard - Materials that will not burn

Physical : 3 Serious Hazard - Materials that may form explosive mixtures with water and are capable of detonation or explosive reaction in the presence of a strong initiating source. Materials may polymerize, decompose, self-react, or undergo other chemical change at normal temperature and pressure with moderate risk of explosion

Personal Protection

: F
F - Safety glasses, Gloves, Synthetic apron, Dust respirator

SDS US (GHS HazCom 2012)

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.