

## Material Safety Data Sheet

Revision Date 09/10/2013

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### 1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Phosphorus pentasulfide

Product Number: D9033

Brand: Dando

Supplier: Dando Chemicals US LLC

Address: 551 E 11 Mile Rd Suite 3B, Madison Heights, MI 48071 USA.

Telephone: 248-629-9434

Emergency Phone # (For both supplier and manufacturer): +1 (313) 520 1328

Email: info@dandochem.us

Preparation Information: Dando Chemicals US LLC

### 2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards

Water Reactive, Target Organ Effect, Toxic by inhalation. Toxic by ingestion, Flammable solid

Target Organs

Lungs, Central nervous system

Other hazards which do not result in classification Lachrymator. Stench.

GHS Classification

Flammable solids (Category 1)

Substances, which in contact with water, emit flammable gases (Category 1)

Acute toxicity, Oral (Category 4)

Acute toxicity, Inhalation (Category 4)

Acute toxicity, Dermal (Category 5)

Acute aquatic toxicity (Category 1)

GHS Label elements, including precautionary statements



Pictogram

Signal word Danger

Hazard statement(s)

H228 Flammable solid.

H260 In contact with water releases flammable gases which may ignite spontaneously.

H302 + H332 Harmful if swallowed or if inhaled

H313 May be harmful in contact with skin.

H400 Very toxic to aquatic life.

Precautionary statement(s)

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

P223 Keep away from any possible contact with water, because of violent reaction and possible flash fire.

P231 + P232 Handle under inert gas. Protect from moisture.

P273 Avoid release to the environment.

P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

P422 Store contents under inert gas.

Other hazards

Contact with water liberates toxic gas.

HMIS Classification

Health hazard: 2

Chronic Health Hazard: \*

Flammability: 1

Physical hazards: 1

NFPA Rating

Health hazard: 2

Fire: 1

Reactivity Hazard: 2

Special hazard.: W

Potential Health Effects

Inhalation Toxic if inhaled. May cause respiratory tract irritation.

Skin May be harmful if absorbed through skin. May cause skin irritation.

Eyes May cause eye irritation.

Ingestion Toxic if swallowed.

### **3. COMPOSITION/INFORMATION ON INGREDIENTS**

Synonyms: Phosphorus (V) sulfide

Formula: P<sub>2</sub>S<sub>5</sub>

Molecular Weight: 222.27 g/mol

Component Concentration

Phosphorus pentasulphide

CAS-No. 1314-80-3

EC-No. 215-242-4

Index-No. 015-104-00-1

### **4. FIRST AID MEASURES**

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Flush eyes with water as a precaution.

If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

### **5. FIREFIGHTING MEASURES**

Conditions of flammability

Flammable in the presence of a source of ignition, through friction or retained heat. May burn in presence of air, or emit a flammable gas in the presence of water or water vapour. Keep away from heat/sparks/open flame/hot surface. No smoking. Keep away from heat/sparks/open flame/hot surface/air/water. No smoking.

Suitable extinguishing media

Dry powder

Special protective equipment for firefighters

Wear self contained breathing apparatus for fire fighting if necessary.

Hazardous combustion products

Hazardous decomposition products formed under fire conditions. - Sulphur oxides, Oxides of phosphorus

## **6. ACCIDENTAL RELEASE MEASURES**

Personal precautions

Wear respiratory protection. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation.

Remove all sources of ignition. Evacuate personnel to safe areas. Avoid breathing dust.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up

Sweep up and shovel. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet brushing and place in container for disposal according to local regulations (see section 13). Do not flush with water.

Keep in suitable, closed containers for disposal.

## **7. HANDLING AND STORAGE**

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. Keep away from sources of ignition - No smoking. Take measures to prevent the buildup of electrostatic charge.

Conditions for safe storage

Keep container tightly closed in a dry and well-ventilated place.

Never allow product to get in contact with water during storage.

Keep in a dry place.

## **8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

Components with workplace control parameters

Components CAS-No. Value Control parameters

BasisPhosphorus pentasulphide

1314-80-3 TWA 1 mg/m<sup>3</sup> USA. ACGIH Threshold Limit Values (TLV)

Remarks Upper Respiratory Tract irritation

STEL 3 ppm USA. ACGIH Threshold Limit Values (TLV)

Upper Respiratory Tract irritation

TWA 1 mg/m<sup>3</sup> USA. Occupational Exposure Limits (OSHA) - Table Z-1

Limits for Air Contaminants

TWA 1 mg/m<sup>3</sup> USA. OSHA - TABLE Z-1 Limits for Air Contaminants -1910.1000

STEL 3 mg/m<sup>3</sup> USA. OSHA - TABLE Z-1 Limits for Air Contaminants -1910.1000

TWA 1 mg/m<sup>3</sup> USA. NIOSH Recommended Exposure Limits

ST 3 mg/m<sup>3</sup> USA. NIOSH Recommended Exposure Limits

Personal protective equipment

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100

(US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Immersion protection

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: > 480 min

Splash protection

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: > 30 min

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 873000, e-mail sales@kcl.de, test method:

EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an Industrial

Hygienist familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

#### Eye protection

Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

#### Skin and body protection

Complete suit protecting against chemicals, Flame retardant antistatic protective clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

#### Hygiene measures

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

### **9. PHYSICAL AND CHEMICAL PROPERTIES**

#### Appearance

Form powder

Colour yellow

#### Safety data

pH no data available

#### Melting

point/freezing point

Melting point/range: 280 - 284 °C (536 - 543 °F) - lit.

Boiling point 514 °C (957 °F) at 1,013 hPa (760 mmHg)

Flash point not applicable

#### Flammability (solid, gas)

The substance or mixture is a flammable solid with the category 1.

Ignition temperature no data available

Autoignition no data available

temperature

Lower explosion limit no data available

Upper explosion limit no data available

Vapour pressure 1 hPa (1 mmHg) at 300 °C (572 °F)

Density 2.09 g/mL at 25 °C (77 °F)

Water solubility no data available

Partition coefficient:

n-octanol/water

no data available

Relative vapour

density

no data available

Odour Stench.

Odour Threshold no data available

Evaporation rate no data available

## **10. STABILITY AND REACTIVITY**

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

Reacts violently with water.

Conditions to avoid

Heat, flames and sparks. Extremes of temperature and direct sunlight. Exposure to moisture.

Materials to avoid

Strong oxidizing agents, acids, Alcohols, Reacts violently with water.

Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Sulphur oxides, Oxides of phosphorus

Other decomposition products - no data available

## **11. TOXICOLOGICAL INFORMATION**

Acute toxicity

Oral LD50

LD50 Oral - rat - 389 mg/kg

Inhalation LC50

Dermal LD50

LD50 Dermal - rabbit - 3,160 mg/kg

Remarks: Prolonged skin contact may cause skin irritation and/or dermatitis.

Other information on acute toxicity

no data available

**Skin corrosion/irritation**

no data available

**Serious eye damage/eye irritation**

no data available

**Respiratory or skin sensitization**

no data available

**Germ cell mutagenicity**

no data available

**Carcinogenicity**

IARC: 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.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

**Reproductive toxicity**

no data available

**Teratogenicity**

no data available

**Specific target organ toxicity - single exposure (Globally Harmonized System)**

no data available

**Specific target organ toxicity - repeated exposure (Globally Harmonized System)**

no data available

**Aspiration hazard**

no data available

**Potential health effects**

Inhalation Toxic if inhaled. May cause respiratory tract irritation.

Ingestion Toxic if swallowed.

Skin May be harmful if absorbed through skin. May cause skin irritation.

Eyes May cause eye irritation.



### Signs and Symptoms of Exposure

Cough, Shortness of breath, Headache, Nausea, Vomiting, Pulmonary edema. Effects may be delayed. Hydrogen sulfide is strongly bound to methemoglobin in a manner similar to cyanide. Toxicologically, its reaction with enzymes in the blood stream inhibits cell respiration resulting in pulmonary paralysis, sudden collapse, and death. It is recognized by its characteristic odor of "rotten eggs". The detectable, minimum perceptible odor occurs at 0.13ppm, rapid olfactory fatigue can occur at high concentrations (>100 ppm). At concentrations of 20ppm hydrogen sulfide begins acting as an irritant on the mucous membranes of the eyes and respiratory tract and increases with concentration and exposure time.

Eye irritation is characterized by irritation of the conjunctiva with photophobia to keratoconjunctivitis and vesiculation of the cornea epithelium. Prolonged exposure to moderate concentrations (250ppm) may cause pulmonary edema. At concentrations over 500ppm, drowsiness, dizziness, excitement, headache, unstable gait, and other systemic symptoms occur within a few minutes. Sudden loss of consciousness without premonition, anxiety, or sense of struggle are characteristic of acute exposure at concentrations above 700ppm. At concentrations of 1000-2000ppm hydrogen sulfide is rapidly absorbed through the lung into the blood. In this range a single inhalation may cause coma and may be rapidly fatal. Initially hyperpnea occurs, followed by rapid collapse and respiratory inhibition. At higher concentrations, hydrogen sulfide exerts an immediate paralyzing effect on the respiratory centers. When concentration reaches 5000ppm, imminent death almost always results.

#### Synergistic effects

no data available

#### Additional Information

RTECS: TH4375000

## **12. ECOLOGICAL INFORMATION**

#### Toxicity

no data available

#### Persistence and degradability

no data available

#### Bioaccumulative potential

no data available

#### Mobility in soil

no data available

#### PBT and vPvB assessment

no data available

#### Other adverse effects

Very toxic to aquatic life.

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

## **13. DISPOSAL CONSIDERATIONS**

Product

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material

is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed

professional waste disposal service to dispose of this material.

Contaminated packaging

Dispose of as unused product.

**14. TRANSPORT INFORMATION**

DOT (US)

UN number: 1340 Class: 4.3 (4.1) Packing group: II

Proper shipping name: Phosphorus pentasulfide

Reportable Quantity (RQ): 100 lbs

Marine pollutant: No

Poison Inhalation Hazard: No

IMDG

UN number: 1340 Class: 4.3 (4.1) Packing group: II EMS-No: F-G, S-N

Proper shipping name: PHOSPHORUS PENTASULPHIDE

Marine pollutant: No

IATA

UN number: 1340 Class: 4.3 (4.1) Packing group: II

Proper shipping name: Phosphorus pentasulphide

**15. REGULATORY INFORMATION**

OSHA Hazards

Water Reactive, Target Organ Effect, and Toxic by inhalation. Toxic by ingestion, Flammable solid

SARA 302 Components

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components

SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold

(De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards

Reactivity Hazard, Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

Phosphorus pentasulphide

CAS-No.

1314-80-3

Revision Date

1993-04-24

Pennsylvania Right To Know Components

Phosphorus pentasulphide

CAS-No.

1314-80-3

Revision Date

1993-04-24

New Jersey Right To Know Components

CAS-No. Revision Date

Phosphorus pentasulphide 1314-80-3 1993-04-24

California Prop. 65 Components

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

## **16. OTHER INFORMATION**

### **Further information**

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. Dando Chemicals and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product.