



Safety Data Sheet (SDS)

OSHA HazCom Standard 29 CFR 1910.1200(g) and GHS Rev 03.

Issue date 04/24/2018

Reviewed on 04/24/2018

1 Identification

- **Product Identifier**

- **Trade Name: Phosphine Adsorbent Mixture**

- **Relevant identified uses of the substance or mixture and uses advised against:**

- **Product Description:** Adsorbing Agent for Phosphine Mixtures

- **Application of the substance / the mixture:**

Phosphine Adsorbent Mixture converts phosphine to water and phosphoric acid.

- **Details of the Supplier of the Safety Data Sheet:**

- **Manufacturer/Supplier:**

DEGESCH America, Inc.

153 Triangle Dr.

P.O. Box 116

Weyers Cave, VA 24486 USA

Telephone: (540) 234-9281 / 800-330-2525

Telefax: (540) 234-8225

www.degeschamerica.com

degesch@degeschamerica.com

- **Emergency telephone number:**

For human or animal emergencies: 1-800-308-4856 (Rocky Mountain Poison and Drug Center)

For all other chemical emergencies: 1-800-424-9300 (Chemtrec)

Emergency and Information - DEGESCH America, Inc.: (540) 234-9281 / 800-330-2525

* 2 Hazard(s) Identification

- **Classification of the substance or mixture:**



GHS09 Environment

Aquatic Chronic 2 H411 Toxic to aquatic life with long lasting effects.



GHS07

Acute Tox. 4 H302 Harmful if swallowed.

Acute Tox. 4 H332 Harmful if inhaled.

Eye Irrit. 2A H319 Causes serious eye irritation.

Aquatic Acute 2 H401 Toxic to aquatic life.

- **Label elements:**

- **GHS label elements**

The product is classified and labeled according to the Globally Harmonized System (GHS).

- **Hazard pictograms:**



GHS07 GHS09

- **Signal word:** Warning

- **Hazard-determining components of labeling:**

Manganese Dioxide

Copper(I) Oxide

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Trade Name: Phosphine Adsorbent Mixture

• Hazard statements:

- H302+H332 Harmful if swallowed or if inhaled.
 H319 Causes serious eye irritation.
 H401 Toxic to aquatic life.
 H411 Toxic to aquatic life with long lasting effects.

• Precautionary statements:

- P261 Avoid breathing dust/fume/gas/mist/vapors/spray.
 P264 Wash thoroughly after handling.
 P270 Do not eat, drink or smoke when using this product.
 P273 Avoid release to the environment.
 P301+P312 If swallowed: Call a poison center/doctor if you feel unwell.
 P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
 P391 Collect spillage.
 P405 Store locked up.
 P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

• Unknown acute toxicity:

This value refers to knowledge of known, established toxicological or ecotoxicological values.
 86.9 % of the mixture consists of component(s) of unknown toxicity.

• Classification system: NFPA/HMIS Definitions: 0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme

• NFPA ratings (scale 0 - 4)



• HMIS-ratings (scale 0 - 4)



• Hazard(s) not otherwise classified (HNOC): None known

* 3 Composition/Information on Ingredients

• Chemical characterization: Mixtures

• Description: Mixture of substances listed below with non-hazardous additions.

• Dangerous Components:

CAS: 1313-13-9 RTECS: OP 0350000	Manganese Dioxide ⚠ Acute Tox. 4, H302; Acute Tox. 4, H332	60-90%
CAS: 1317-39-1	Copper(I) Oxide ⚠ Eye Dam. 1, H318; ⚠ Aquatic Acute 1, H400; Aquatic Chronic 1, H410; ⚠ Acute Tox. 4, H302; Acute Tox. 4, H332	15-35%
CAS: 1317-38-0	Copper (II) Oxide ⚠ Aquatic Acute 1, H400; Aquatic Chronic 1, H410; ⚠ Acute Tox. 4, H302	≤2.5%
CAS: 7440-50-8 RTECS: GL 5325000	Copper ⚠ Flam. Sol. 1, H228; ⚠ STOT SE 3, H335; Aquatic Acute 3, H402; Aquatic Chronic 4, H413	≤2.5%

• Additional information:

The exact percentages of the ingredients of this mixture are considered to be proprietary and are withheld in accordance with the provisions of paragraph (i) of §1910.1200 of 29 CFR 1910.1200 Trade Secrets.

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4 First-Aid Measures

- **Description of first aid measures**

- **General information:**

Symptoms of poisoning may occur after exposure to dust, fumes or particulates; seek medical attention if feeling unwell.

- **After inhalation:**

Supply fresh air. If required, provide artificial respiration. Consult doctor if symptoms persist.

In case of unconsciousness place patient stably in side position for transportation.

- **After skin contact:**

Take off contaminated clothing immediately. Rinse skin immediately with plenty of water for 15-20 minutes. Seek medical attention if skin irritation develops.

- **After eye contact:**

Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Get immediate medical attention.

- **After swallowing:**

Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not give anything by mouth to an unconscious person. Do not induce vomiting unless told to by a poison control center or doctor.

- **Information for doctor**

- **Most important symptoms and effects, both acute and delayed:** No further relevant information available.

- **Indication of any immediate medical attention and special treatment needed:**

No further relevant information available.

* 5 Fire-Fighting Measures

- **Extinguishing media**

- **Suitable extinguishing agents:**

Use fire fighting measures that suit the environment.

Use dry chemicals, carbon dioxide or water to extinguish fires.

- **For safety reasons unsuitable extinguishing agents:** No further relevant information.

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

If incinerated, product will release the following toxic materials: Oxides of Manganese and Copper.

- **Advice for firefighters**

- **Special protective equipment for firefighters:**

Wear SCBA if there is danger of exposure.

As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH approved or equivalent) and full protective gear to prevent contact with skin and eyes.

* 6 Accidental Release Measures

- **Personal precautions, protective equipment and emergency procedures:**

Ensure adequate ventilation.

Wear dust mask

Avoid formation of dust.

- **Environmental precautions:**

Inform respective authorities in case of seepage into water course or sewage system.

Do not allow to enter sewers/surface or ground water.

- **Methods and material for containment and cleaning up:**

Dispose contaminated material as waste according to section 13.

Ensure adequate ventilation.

Dispose of the collected material according to regulations.

- **Reference to other sections:**

See Section 7 for information on safe handling.

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See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

• **Protective Action Criteria for Chemicals**

• **PAC-1:**

1313-13-9	Manganese Dioxide	4.7 mg/m ³
1317-39-1	Copper(I) Oxide	0.68 mg/m ³
1317-38-0	Copper (II) Oxide	0.75 mg/m ³
7440-50-8	Copper	3 mg/m ³

• **PAC-2:**

1313-13-9	Manganese Dioxide	7.9 mg/m ³
1317-39-1	Copper(I) Oxide	16 mg/m ³
1317-38-0	Copper (II) Oxide	11 mg/m ³
7440-50-8	Copper	33 mg/m ³

• **PAC-3:**

1313-13-9	Manganese Dioxide	690 mg/m ³
1317-39-1	Copper(I) Oxide	93 mg/m ³
1317-38-0	Copper (II) Oxide	93 mg/m ³
7440-50-8	Copper	200 mg/m ³

* 7 Handling and Storage

• **Handling**

• **Precautions for safe handling:**

Store in cool, dry place in tightly closed receptacles.

Avoid creating and breathing dust/fume/gas/mist/vapors/spray.

Ensure good ventilation/exhaustion at the workplace.

• **Information about protection against explosions and fires:** No special measures required.

• **Conditions for safe storage, including any incompatibilities**

Store away strong acids, strong oxidizing agents, strong reducing agents, organic material, combustible materials, sulfur, chlorine trifluoride, hydrogen peroxide, peroxymonosulfuric acid, potassium azide, sodium peroxide, concentrated peroxyformic acid and reactive metal powders such as aluminum.

• **Storage**

• **Requirements to be met by storerooms and receptacles:** Store in the original container.

• **Information about storage in one common storage facility:** Not required.

• **Further information about storage conditions:** Keep container tightly sealed.

• **Specific end use(s):** No further relevant information available.

* 8 Exposure Controls/Personal Protection

• **Additional information about design of technical systems:** No further data; see section 7.

• **Control parameters:**

All ventilation should be designed in accordance with OSHA standard (29 CFR 1910.94). Use local exhaust at filling zones and where leakage and dust formation is probable. Use mechanical (general) ventilation for storage areas. Use appropriate ventilation as required to keep Exposure Limits in Air below TLV & PEL limits.

• **Components with occupational exposure limits:**

The following constituent is the only constituent of the product which has a PEL, TLV or other recommended exposure limit.

At this time, the other constituents have no known exposure limits.

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Trade Name: Phosphine Adsorbent Mixture**1313-13-9 Manganese Dioxide**

PEL	Ceiling limit value: 5 mg/m ³ as Mn
REL	Short-term value: 3 mg/m ³ Long-term value: 1 mg/m ³ as Mn
TLV	Long-term value: 0.02* 0.1** mg/m ³ as Mn; *respirable **inhalable fraction

• **Additional information:** The lists that were valid during the creation of this SDS were used as basis.

• **Exposure controls:**

• **Personal protective equipment**

• **General protective and hygienic measures:**

Immediately remove all soiled and contaminated clothing.

Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing and wash before reuse.

Wash hands before breaks and at the end of work.

Avoid contact with the eyes and skin.

• **Breathing equipment:**



NIOSH/OSHA or EN approved respiratory protection is recommended for use in airborne concentrations exceeding exposure limits.

• **Protection of hands:**



Protective gloves

• **Material of gloves:**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material cannot be calculated in advance and has therefore to be checked prior to the application.

• **Penetration time of glove material:**

The exact break-through time has to be determined and observed by the manufacturer of the protective gloves.

• **Eye protection:**



Tightly sealed goggles

• **Limitation and supervision of exposure into the environment:**

Keep away from drains, surface and ground waters.

Avoid release into the environment.

* 9 Physical and Chemical Properties

• **Information on basic physical and chemical properties**

• **General Information**

• **Appearance:**

Form:

Powder

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- Color:** Dark charcoal gray
- Odour:** Recognizable
- Odor threshold:** Not determined.
- pH-value:** Not applicable.
- Change in condition**
 - Melting point/Melting range:** Not determined.
 - Boiling point/Boiling range:** $\geq 1,800\text{ }^{\circ}\text{C}$ ($\geq 3,272\text{ }^{\circ}\text{F}$)
- Flash point:** Not determined.
- Flammability (solid, gaseous):** Not determined.
- Ignition temperature:** Not applicable
- Decomposition temperature:** $500\text{ }^{\circ}\text{C}$ ($932\text{ }^{\circ}\text{F}$) (calculated)
- Auto igniting:** Product is not self-igniting.
- Danger of explosion:** Product does not present an explosion hazard.
- Explosion limits:**
 - Lower:** Not determined.
 - Upper:** Not determined.
- Vapor pressure:** Not applicable.
- Density @ 20 °C (68 °F):** 5.1581 g/cm^3 (43.0443 lbs/gal)
- Relative density:** Not determined.
- Vapor density:** Not applicable.
- Evaporation rate:** Not applicable.
- Solubility in / Miscibility with:**
 - Water:** Insoluble, reacts
- Partition coefficient (n-octanol/water):** Not determined.
- Viscosity:**
 - Dynamic:** Not applicable.
 - Kinematic:** Not applicable.
- Solvent content:**
 - VOC content:** 0.00 %
 - Solids content:** 100.0 %
- Other information:** No further relevant information available.

*** 10 Stability and Reactivity**

- Reactivity:** No further relevant information available.
- Chemical stability:** Product is stable under normal conditions.
- Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- Possibility of hazardous reactions:** No dangerous reactions known.
- Conditions to avoid:** Avoid prolonged exposure to air.
- Incompatible materials:** Strong acids, strong oxidizing agents, strong reducing agents, organic material, combustible materials, sulfur, chlorine trifluoride, hydrogen peroxide, peroxymonosulfuric acid, potassium azide, sodium peroxide, concentrated peroxyformic acid and reactive metal powders such as aluminum.
- Hazardous decomposition products:** Oxides of Manganese and Copper.

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Trade Name: Phosphine Adsorbent Mixture

* 11 Toxicological Information

- **Information on toxicological effects:**
- **Acute toxicity:**

- **LD/LC50 values that are relevant for classification:**

1317-39-1 Copper(I) Oxide

Oral LD50 470 mg/kg (Rat)

- **Primary irritant effect:**
- **On the skin:** May be irritating.
- **On the eye:** Causes serious eye irritation.
- **Additional toxicological information:**

The product shows the following dangers according to internally approved calculation methods for preparations:

Harmful
Irritant

- **Carcinogenic categories:**

- **IARC (International Agency for Research on Cancer):**

None of the ingredients are listed.

- **NTP (National Toxicology Program):**

None of the ingredients are listed.

- **OSHA-Ca (Occupational Safety & Health Administration):**

None of the ingredients are listed.

* 12 Ecological Information

- **Toxicity:**
- **Aquatic toxicity:**
Avoid release into the environment. Runoff from fire control or dilution water may cause pollution.

1317-38-0 Copper (II) Oxide

EC50 25.4 mg/l (Daphnia)

- **Persistence and degradability:** No further relevant information available.
- **Behavior in environmental systems:**
- **Bioaccumulative potential:** No further relevant information available.
- **Mobility in soil:** No further relevant information available.
- **Ecotoxicological effects:**
- **Remark:** Toxic for fish
- **Additional ecological information:**
- **General notes:**
Do not allow undiluted product or product that has not been neutralized to reach ground water, water course or sewage system.
Poisonous for fish and plankton in water bodies.
Toxic for aquatic organisms
- **Results of PBT and vPvB assessment:**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **Other adverse effects:** No further relevant information available.

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* 13 Disposal Considerations

- **Waste treatment methods**
- **Recommendation:**
Must not be disposed of together with household garbage. Do not allow product to reach sewage system. Observe all federal, state and local environmental regulations when disposing of this material.
- **Uncleaned packagings**
- **Recommendation:** Dispose of as unused product.

* 14 Transport Information

- **UN-Number:**
- **DOT** Non-Regulated Material
- **ADR/ADN, IMDG, IATA** UN3077
- **UN proper shipping name:**
- **DOT** Non-Regulated Material
- **ADR/ADN** UN3077 Environmentally hazardous substances, solid, n.o.s. (Copper(I) Oxide)
- **IMDG** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Copper(I) Oxide, Copper (II) Oxide), MARINE POLLUTANT
- **IATA** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Copper(I) Oxide)
- **Transport hazard class(es):**
- **DOT**
- **Class:** Non-Regulated Material
- **ADR/ADN**
- 

- **Class:** 9 (M7) Miscellaneous dangerous substances and articles
- **Label:** 9
- **IMDG, IATA**
- 

- **Class:** 9 Miscellaneous dangerous substances and articles
- **Label:** 9
- **Packing group:**
- **DOT** Non-Regulated Material
- **ADR/ADN, IMDG, IATA** III
- **Environmental hazards:** Product contains environmentally hazardous substances: Copper(I) Oxide
- **Special marking (ADR/ADN):** Symbol (fish and tree)
- **Special marking (IATA):** Symbol (fish and tree)
- **Special precautions for user:** Warning: Miscellaneous dangerous substances and articles
- **Danger code (Kemler):** 90
- **EMS Number:** F-A,S-F

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Trade Name: Phosphine Adsorbent Mixture

- **Stowage Category** A
- **Stowage Code** SW23 When transported in BK3 bulk container, see 7.6.2.12 and 7.7.3.9.
- **Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:** Not applicable.
- **Transport/Additional information:**
- **ADR/ADN**
- **Excepted quantities (EQ):** Code: E1
Maximum net quantity per inner packaging: 30 g
Maximum net quantity per outer packaging: 1000 g
- **IMDG**
- **Limited quantities (LQ):** 5 kg
- **Excepted quantities (EQ):** Code: E1
Maximum net quantity per inner packaging: 30 g
Maximum net quantity per outer packaging: 1000 g
- **UN "Model Regulation":** UN 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, N.O.S. (COPPER(I) OXIDE), 9, III

*** 15 Regulatory Information**

- **Safety, health and environmental regulations/legislation specific for the substance or mixture:**
- **SARA (Superfund Amendments and Reauthorization):**

• **Section 355 (extremely hazardous substances):**

None of the ingredients are listed.

• **Section 313 (Specific toxic chemical listings):**

All ingredients are listed.

• **TSCA (Toxic Substances Control Act):**

All ingredients are listed or exempt from listing.

• **California Proposition 65:**• **Chemicals known to cause cancer:**

None of the ingredients are listed.

• **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients are listed.

• **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients are listed.

• **Chemicals known to cause developmental toxicity:**

None of the ingredients are listed.

• **New Jersey Right-to-Know List:**

7440-50-8 Copper

• **New Jersey Special Hazardous Substance List:**

None of the ingredients are listed.

• **Pennsylvania Right-to-Know List:**

7440-50-8 Copper

• **Pennsylvania Special Hazardous Substance List:**

7440-50-8 Copper

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Trade Name: Phosphine Adsorbent Mixture

• **Carcinogenic categories:**

• **EPA (Environmental Protection Agency):**

1313-13-9	Manganese Dioxide	D
7440-50-8	Copper	D

• **TLV (Threshold Limit Value established by ACGIH):**

None of the ingredients are listed.

• **NIOSH-Ca (National Institute for Occupational Safety and Health):**

None of the ingredients are listed.

• **GHS label elements**

The product is classified and labeled according to the Globally Harmonized System (GHS).

• **Hazard pictograms:**



GHS07 GHS09

• **Signal word:** Warning

• **Hazard-determining components of labeling:**

Manganese Dioxide

Copper(I) Oxide

• **Hazard statements:**

H302+H332 Harmful if swallowed or if inhaled.

H319 Causes serious eye irritation.

H401 Toxic to aquatic life.

H411 Toxic to aquatic life with long lasting effects.

• **Precautionary statements:**

P261 Avoid breathing dust/fume/gas/mist/vapors/spray.

P264 Wash thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P273 Avoid release to the environment.

P301+P312 If swallowed: Call a poison center/doctor if you feel unwell.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P391 Collect spillage.

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

• **National regulations:**

None of the ingredients are listed.

• **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other Information

The information and recommendations in this safety data sheet are, to the best of our knowledge, accurate as of the date of issue. Nothing herein shall be deemed to create warranty, expressed or implied, and shall not establish a legally valid contractual relationship. It is the responsibility of the user to determine applicability of this information and the suitability of the material or product for any particular purpose.

• **Date of preparation / last revision:** 04/24/2018 / 1

• **Abbreviations and acronyms:**

ADR: The European Agreement concerning the International Carriage of Dangerous Goods by Road

ADN: The European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways

IMDG: International Maritime Code for Dangerous Goods

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DOT: US Department of Transportation
 IATA: International Air Transport Association
 ACGIH: American Conference of Governmental Industrial Hygienists
 EINECS: European Inventory of Existing Commercial Chemical Substances
 ELINCS: European List of Notified Chemical Substances
 CAS: Chemical Abstracts Service (division of the American Chemical Society)
 NFPA: National Fire Protection Association (USA)
 HMIS: Hazardous Materials Identification System (USA)
 VOC: Volatile Organic Compounds (USA, EU)
 LC50: Lethal concentration, 50 percent
 LD50: Lethal dose, 50 percent
 PBT: Persistent, Bioaccumulative and Toxic
 vPvB: very Persistent and very Bioaccumulative
 NIOSH: National Institute for Occupational Safety and Health
 OSHA: Occupational Safety & Health Administration
 TLV: Threshold Limit Value
 PEL: Permissible Exposure Limit
 REL: Recommended Exposure Limit
 Flam. Sol. 1: Flammable solids – Category 1
 Acute Tox. 4: Acute toxicity – Category 4
 Eye Dam. 1: Serious eye damage/eye irritation – Category 1
 Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A
 STOT SE 3: Specific target organ toxicity (single exposure) – Category 3
 Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1
 Aquatic Acute 2: Hazardous to the aquatic environment - acute aquatic hazard – Category 2
 Aquatic Acute 3: Hazardous to the aquatic environment - acute aquatic hazard – Category 3
 Aquatic Chronic 1: Hazardous to the aquatic environment - long-term aquatic hazard – Category 1
 Aquatic Chronic 2: Hazardous to the aquatic environment - long-term aquatic hazard – Category 2
 Aquatic Chronic 4: Hazardous to the aquatic environment - long-term aquatic hazard – Category 4

• *** Data compared to the previous version altered.**

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