Safety Data Sheet – Phosphorus Dopant Coating PDC5-2500

1. Identification of Substance / Preparation and Company

Trade name:
Phosphorus Dopant Coating PDC5-2500

Use of the substance/Preparation:

- Industry sector: semiconductor industry
- Type of use: spin-on dielectric coating

NOT FOR RECREATIONAL OR PERSONAL USE. NEVER CONSUME THIS PRODUCT.

Identification of the company:

Futurrex, Inc.
24 Munsonhurst Rd
Franklin, NJ 07416 USA

Telephone no. 1-888-999-4188 from 8:00 am to 6:00 pm (EST)

Emergency telephone number: 1-800-535-5053 (U.S. and Canada)
1-352-323-3500 (International)

Person Responsible for SDS preparation:

Aga Rusin, e-mail: info@futurrex.com

2. Hazards identification

GHS CLASSIFICATION:

<table>
<thead>
<tr>
<th>HEALTH</th>
<th>ENVIRONMENTAL</th>
<th>PHYSICAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Oral Toxicity: Category 4</td>
<td>Acute Toxicity:</td>
<td>Flammable Liquid – Category 3</td>
</tr>
<tr>
<td>Acute Dermal Toxicity: Category 5</td>
<td>None Known</td>
<td></td>
</tr>
<tr>
<td>Eye Irritation: Category 2A</td>
<td>Chronic Toxicity:</td>
<td></td>
</tr>
<tr>
<td>Skin Irritation: Category 2</td>
<td>None Known</td>
<td></td>
</tr>
<tr>
<td>Acute(Inhalation-Vapor): Category 5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Contact:

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Website: www.futurrex.com
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GHS LABEL: 

SIGNAL WORD: Warning!

GHS07  GHS02

<table>
<thead>
<tr>
<th>HAZARD STATEMENTS</th>
<th>PRECAUTIONARY STATEMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>H 226 Flammable liquid and vapor</td>
<td>P 210 Keep away from heat, sparks, and flame.</td>
</tr>
<tr>
<td>H 302 Harmful if swallowed</td>
<td>P 261 Avoid breathing vapors.</td>
</tr>
<tr>
<td>H313+333 May be harmful in contact with skin or if inhaled</td>
<td>P 262 Do not get in eyes, on skin, or on clothing.</td>
</tr>
<tr>
<td>H 315 Causes skin irritation</td>
<td>P 280 Wear protective gloves, protective clothing, eye protection, face protection.</td>
</tr>
<tr>
<td>H 319 Causes serious eye irritation</td>
<td>P 264 Wash hands thoroughly after handling.</td>
</tr>
<tr>
<td>H 335+336 May cause respiratory irritation, and drowsiness</td>
<td>P 403+235 Keep container in a cool, well-ventilated area.</td>
</tr>
</tbody>
</table>

3. Composition/information on ingredients

<table>
<thead>
<tr>
<th>CAS#</th>
<th>EINECS</th>
<th>Chemical Name</th>
<th>Concentration</th>
<th>Hazard symbols</th>
<th>R phrases*</th>
</tr>
</thead>
<tbody>
<tr>
<td>71-36-3</td>
<td>200-751-6</td>
<td>1-butanol</td>
<td>&gt;80</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Resins</td>
<td>&lt;20</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Additives</td>
<td>&lt;10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. First aid measures

Description of necessary measures according to routes of exposure

Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get

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Website: www.futurrex.com

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medical help.

Skin: Immediately wash with soap and water. Remove contaminated clothing and shoes. Get medical aid if irritation develops and persists. Wash clothing before reuse. Seek medical assistance for irritation or any other symptoms.

Ingestion: Potential for aspiration if swallowed. Get medical aid immediately. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.

Inhalation: Remove to fresh air. If not breathing, apply artificial respiration, preferably mouth-to-mouth. Get medical assistance.

Notes to Physician: Alcoholic beverage consumption may enhance the toxic effects of this substance. Persons with liver, kidney, or central nervous system diseases may be at increased risk from exposure to this product. 1-butanol is especially toxic if aspirated. Treat symptomatically and supportively.

5. Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use water spray to keep fire-exposed containers cool. Flammable liquid and vapor. Vapors are heavier than air and may travel to a source of ignition and flash back. Vapors can spread along the ground and collect in low or confined areas.

Extinguishing Media: Alcohol foam, carbon dioxide, dry chemical, or water spray. Avoid solid streams of water which may spread burning liquid.

Flash Point: 35 °C (95 °F)  
Auto-ignition Temperature: 343 °C (649 °F)  
Explosion Limits, Lower: 1.4 vol %  
Upper: 11.2 vol %  
NFPA Rating: (estimated) Health: 2; Flammability: 3; Instability: 0

Flammability Conditions

This product is a flammable liquid with regard to AS 1940. Actual autoignition temperature (AIT) can be affected by the concentration of vapors and oxygen, vapors and oxygen, vapor/air contact time, pressure, volume, catalytic impurities, etc. Process conditions should be analyzed to determine if the AIT's may be higher or lower. Vapor forms explosive mixture with air. Hazardous gases/vapors produced in fire are carbon monoxide.
6. Accidental release measures

Emergency procedures

Clean-up personnel should wear full protective clothing including breathing apparatus. Remove source of heat, sparks, flame, impact, friction or electricity. Prevent material from entering sewers, waterways, or low areas. Provide ventilation.

Methods and materials for containment and clean up

Recover free liquid for reuse or reclamation. Recover undamaged and minimally contaminated material for reuse and reclamation. Soak up with sawdust, sand, oil, dry or other absorbent material.

7. Handling and Storage

Recommended Storage Conditions

Store at 0 – 5 °C. Allow to warm to room temperature prior to using.

Precautions for safe handling

Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation. Use with adequate ventilation. Keep away from heat and flame.

Conditions for safe storage, including any incompatibles

This product is a flammable liquid with regard to AS 1940. Storage should be in accordance with applicable commonwealth, state or territory regulation. Do not mix with strong oxidizing agents. Keep container tightly closed. Avoid breathing vapors or mist. Avoid contact with eyes, skin or clothing. Wash thoroughly after handling.

8. Exposure Controls, Personal Protection

National Exposure Standards

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH TLV</th>
<th>NIOSH</th>
<th>OSHA - Final PELs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-butanol</td>
<td>20 ppm (TWA)-Skin</td>
<td>50 ppm (C)-skin</td>
<td>50 ppm (TWA)-Skin</td>
</tr>
</tbody>
</table>

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FUTURREX, INC
Boron Dopant Coating PDC5-2500
Page 4 of 10
Safety Data Sheet – Phosphorus Dopant Coating PDC5-2500

Biological Limit Values
No Data Available

Engineering Controls
Use sufficient ventilation to keep employee exposures below recommended limits.

Personal Protection
Eyes: Wear chemical splash goggles.
Skin: Wear appropriate protective gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

9. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical State</td>
<td>liquid</td>
</tr>
<tr>
<td>Color</td>
<td>colorless</td>
</tr>
<tr>
<td>Odor</td>
<td>vinous or wine-like</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>1.2 ppm</td>
</tr>
<tr>
<td>pH</td>
<td>Not available</td>
</tr>
<tr>
<td>Melting Point</td>
<td>-90 °C</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>118 °C</td>
</tr>
<tr>
<td>Flash Point</td>
<td>35 °C</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability</td>
<td>Flammable Liquid</td>
</tr>
<tr>
<td>Flammability Limits (as percentage volume in air)</td>
<td></td>
</tr>
<tr>
<td>Lower Explosion Limit</td>
<td>1.4%</td>
</tr>
<tr>
<td>Upper Explosion Limit</td>
<td>11.2%</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>4 mmHg (20 °C)</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>2.55 (air=1)</td>
</tr>
<tr>
<td>Specific Gravity/Relative Density</td>
<td>≤ 1 (Water = 1)</td>
</tr>
<tr>
<td>Solubility in water</td>
<td>Not available</td>
</tr>
</tbody>
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FUTURREX, INC
Boron Dopant Coating PDC5-2500 Page 5 of 10
10. Stability and reactivity

Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.

Conditions to Avoid: Ignition sources, moisture, excess heat.

Incompatibilities with Other Materials: Strong oxidizing agents, alkali metals, strong acids, halogens

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide

Hazardous Polymerization: Will not occur.

11. Toxicological information

Colorless liquid with slight vinous odor. Causes irritation to the skin, eyes, mucous membranes and respiratory tract. Can be absorbed through the skin causing systemic effects. Liquid is flammable

Toxicity Data

Skin: Can be absorbed through the skin causing systemic effects similar to inhalation. Prolonged or repeated contact may cause mild to moderate irritation or dermatitis.

Eyes: Severe irritant. May produce transient corneal damage.

Inhalation: Irritating to the eyes, mucous membranes and respiratory tract. May cause labored breathing, central nervous system depression, tremors and decreased heart rate. At high concentrations, death from respiratory depression may occur. Repeated or prolonged exposures to high concentrations may cause kidney and liver damage.

Ingestion: Produces systemic effects similar to inhalation.

Delayed effects: Liver and kidney damage, and blood and bone marrow effects have been reported in animals.

Immediate (acute) effects:
LD50 (oral-rat): 790 mg/kg
LD50 (skin-rabbit): 3400 mg/kg

Delayed (subchronic and chronic) effects: data not available
12. Ecological Information

Aquatic Toxicity

Fish: Fathead Minnow: LC50 = 1840 mg/L; 96 Hr; Static bioassay at 24.7 °C (pH 7.64).
Water flea Daphnia: EC50 = 1983 mg/L; 48 Hr;

Unspecified Bacteria:
Phytobacterium phosphoreum: EC50 = 2817-3710 mg/L; 5,30 min; Microtox test
Release of n-butanol to soil may result in volatilization from the soil surface and biodegradation is expected to be significant. n-Butanol should not bind strongly to soil and so is expected to leach into groundwater. Release of n-butanol to water is expected to result in biodegradation and in volatilization from the water surface. Photo-oxidation by hydroxyl radicals is expected to be slow.

13. Disposal considerations

DISPOSAL METHODS

Dispose of waste and residues in accordance with local authority requirements. Unused product is a RCRA hazardous waste with numbers U057 and D001.

OTHER DISPOSAL CONSIDERATIONS:

40 CFR Section 268 should be consulted for federal regulatory requirement.

The information offered here is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.
### IATA

<table>
<thead>
<tr>
<th>Shipping Name:</th>
<th>Resin Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazard Class:</td>
<td>3</td>
</tr>
<tr>
<td>UN Number:</td>
<td>1866</td>
</tr>
<tr>
<td>Packing Group:</td>
<td>III</td>
</tr>
<tr>
<td>Marine Pollutant</td>
<td>NO</td>
</tr>
</tbody>
</table>

### RID/ADR

<table>
<thead>
<tr>
<th>Shipping Name:</th>
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### 15. Regulatory information

Labeling in accordance with Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

Hazardous component(s) to be indicated on label

**R phrases**

- R 10 Flammable.
- R 22 Harmful if swallowed
- R 37/38 Irritating to respiratory system and skin
- R 41 Risk of serious damage to eyes
- R 67 Vapors may cause drowsiness and dizziness

**S phrases**

- S 7/9 Keep container tightly closed and in a well-ventilated place
- S 16 Keep away from sources of ignition - No smoking.
- S 24 Avoid contact with skin.
- S 33 Take precautionary measures against static discharges.
- S 46 If swallowed, seek medical advice immediately
US FEDERAL

TSCA
Ingredients are listed on the TSCA inventory.

OSHA
None of the chemicals in this product are considered highly hazardous by OSHA.

Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.

Section 12b
None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.

SARA Section 313 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.

California Proposition 65
This product does not contain any Proposition 65 chemicals.

FOREIGN INVENTORY STATUS:

WHMIS Classification (Canada)
B3, D1B, D2B.
Disclosure List Item Number 467.
This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

Canadian DSL (Domestic Substance List)

EINECS (European Inventory of Existing Commercial Chemical Substances)
EINECS # 200-751-6

16. Other information

HMIS (U.S.A.):
Health Hazard: 2
Fire Hazard: 3
Reactivity: 0
Personal Protection: h

National Fire Protection Association (U.S.A.):
Health: 1
Flammability: 3
Reactivity: 0

 Alterations/supplements to the previous editions:
General update

References:


Sources of key data used to compile the datasheet

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