Hydrous Benzoyl Peroxide USP MSDS
Material Safety Data Sheet

Section 1. Chemical Product and Company Identification

Common Name/Trade Name: Benzoyl peroxide

Manufacturer: SPECTRUM LABORATORY PRODUCTS INC.
14422 S. SAN PEDRO STREET
GARDENA, CA 90248

Catalog Number(s): YY066, BE156
CAS#: 94-36-0
RTECS: DM8575000
TSCA: TSCA (b) inventory: Benzoyl peroxide; Water
CI#: Not available.

Synonym: Hydrous Benzoyl Peroxide; Benzoyl superoxide; Dibenzyol peroxide; Benzoperoxide; Diphenylglyoxal Peroxide

Commercial Name(s): Acetoxyl; Acnegel; Benoxyl; Benzoyl; Cadox; Debroxide; Desanden; Epi-Clear; Fostex; Garox; Lucidol; Lupercos; Panoxyl; Peroxyd; Oxy-5; Oxy-10; Peroxydex; Persadox; Sanoxit; Stri-dex; Sulfoxyl; Superox; Theraderm; Topex; Vanoxide; Xerac

IN CASE OF EMERGENCY
CHEMTREC (24hr) 800-424-9300
CALL (310) 516-8000

Section 2. Composition and Information on Ingredients

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>TWA (mg/m³)</th>
<th>STEL (mg/m³)</th>
<th>CEIL (mg/m³)</th>
<th>% by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Benzoyl peroxide</td>
<td>94-36-0</td>
<td>5</td>
<td></td>
<td>74-75</td>
<td></td>
</tr>
<tr>
<td>2) Water</td>
<td>7732-18-5</td>
<td>25-26</td>
<td></td>
<td>25-26</td>
<td></td>
</tr>
</tbody>
</table>

Toxicological Data on Ingredients

Benzoyl peroxide:
ORAL (LD50):
Acute: 7710 mg/kg [Rat]. 5700 mg/kg [Mouse]. 6400 mg/kg [Rat].

Section 3. Hazards Identification

Potential Acute Health Effects: Hazardous in case of skin contact (irritant, sensitizer), of eye contact (irritant). Slightly hazardous in case of skin contact (permeator), of ingestion, of inhalation. Prolonged exposure may result in skin burns and ulcerations. Over-exposure by inhalation may cause respiratory irritation.

Potential Chronic Health Effects: Slightly hazardous in case of skin contact (irritant, sensitizer), of inhalation.

CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC.

MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Non-mutagenic for bacteria and/or yeast.

TERATOGENIC EFFECTS: Not available.

DEVELOPMENTAL TOXICITY: Not available.
### Section 4. First Aid Measures

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>Eye Contact</strong></td>
<td>Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. WARM water MUST be used. Get medical attention.</td>
</tr>
<tr>
<td><strong>Skin Contact</strong></td>
<td>In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.</td>
</tr>
<tr>
<td><strong>Serious Skin Contact</strong></td>
<td>Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.</td>
</tr>
<tr>
<td><strong>Inhalation</strong></td>
<td>If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.</td>
</tr>
<tr>
<td><strong>Serious Inhalation</strong></td>
<td>Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.</td>
</tr>
<tr>
<td><strong>Ingestion</strong></td>
<td>Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.</td>
</tr>
<tr>
<td><strong>Serious Ingestion</strong></td>
<td>Not available.</td>
</tr>
</tbody>
</table>

### Section 5. Fire and Explosion Data

| **Flammability of the Product** | May be combustible at high temperature. |
| **Auto-Ignition Temperature**  | 80°C (176°F) |
| **Flash Points**               | Not available. |
| **Flammable Limits**           | Not available. |
| **Products of Combustion**     | These products are carbon oxides (CO, CO2). |
| **Fire Hazards in Presence of Various Substances** | Slightly flammable to flammable in presence of open flames and sparks, of heat, of combustible materials, of organic materials. |
| **Explosion Hazards in Presence of Various Substances** | Risks of explosion of the product in presence of static discharge: Not available. Slightly explosive in presence of shocks, of heat, of combustible materials, of organic materials, of metals, of acids, of alkalis. |
| **Fire Fighting Media and Instructions** | Explosive. Oxidizing material. Do not use water jet. Do not fight fire. Evacuate surrounding areas. Use flooding quantities of water. Avoid contact with organic materials. |
| **Special Remarks on Fire Hazards** | Ignition results from benzoyl peroxide in contact with methylmethacrylate and in contact with vinyl acetate + ethyl acetate. Decomposition of benzoyl peroxide releases dense white smoke, toxic and irritating fumes and gases containing benzoic acid, phenyl benzoate, terphenyls, biphenyls, benzene, and carbon dioxide. |
| **Special Remarks on Explosion Hazards** | Shock and Friction Sensitive. Do not allow material to dry out. Dry benzoyl peroxide may spontaneously explode, and may explode when overheated under confinement or heated over its melting point, and forms flammable products upon explosive decomposition above its melting point (103 degrees C). Risk of explosive decomposition exists with friction, shock, or concussion. Reactions resulting in flashing or explosion take place between benzoyl peroxide and organic materials(such as resins and oils), active carbon, metallic powders, and iron rust. Explosive or violent reactions result from benzoyl peroxide's contact with N,N-dimethylaniline, aniline, dimethyl sulfide, lithium tetrahydroaluminate, and N-bromosuccinimide + 4-toluic acid. Polymerization of vinyl acetate with benzoyl peroxide in ethyl acetate accelerated out of control, resulting in discharge of a large volume of vapor which ignited and exploded. Combining 1 g of benzoyl peroxide and 1 drop of aniline yields a mild explosion. Upon adding benzoyl peroxide to a stainless steel beaker, previously rinsed with methyl methacrylate, the benzoyl peroxide polymerized the methacrylate, releasing enough heat to ignite the remaining benzoyl peroxide. Explosion resulted from an attempt to reduce benzoyl peroxide with lithium aluminum hydride. When heated to over 50 degrees C, the reaction of benzoyl peroxide and charcoal is violent. |
A severe explosion risk exists with the crystallization of benzoyl peroxide from hot chloroform solution. Polymerization of vinyl acetate with benzoyl peroxide in ethyl acetate accelerated out of control, resulting in discharge of a large volume of vapor which ignited and exploded. An ampoule holding 0.5 g of N,N-dimethylaniline, broken in an autoclave, reacted with finely ground benzoyl peroxide, leading to explosive decomposition. Combining 1 g of benzoyl peroxide and 1 drop of aniline yields a mild explosion. Upon adding benzoyl peroxide to a stainless steel beaker, previously rinsed with methyl methacrylate, the benzoyl peroxide polymerized the methacrylate, releasing enough heat to ignite the remaining benzoyl peroxide. Explosion resulted from an attempt to reduce benzoyl peroxide with lithium aluminum hydride.

**Section 6. Accidental Release Measures**

**Small Spill**
Use appropriate tools to put the spilled solid in a convenient waste disposal container.

**Large Spill**
Oxidizing material. Organic peroxide. Stop leak if without risk. Do not touch damaged container or spilled material. Do not clean-up or dispose except under supervision of a specialist. Do not operate radio transmitters within 100 m of an electric detonator. Avoid contact with a combustible material (wood, paper, oil, clothing...). Keep substance damp using water spray. Do not use metal tools or equipment. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

**Section 7. Handling and Storage**

**Precautions**
Keep away from heat. Keep away from sources of ignition. Keep away from combustible material. Keep away from direct sunlight or strong incandescent light. Ground all equipment containing material. Do not ingest. Do not breathe dust. Avoid shock and friction. Wear protective clothing. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as reducing agents, combustible materials, organic materials, metals, acids, alkalies.

**Storage**
Store in a segregated, approved and labeled area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Separate from acids, alkalies, reducing agents and combustibles. See NFPA 43A, Code for the Storage of Liquid and Solid Oxidizers. Avoid all possible sources of ignition (spark or flame). Do not store above 40°C (104°F).

**Section 8. Exposure Controls/Personal Protection**

**Engineering Controls**
Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

**Personal Protection**
Splash Goggles or Safety glasses. Synthetic apron or Lab coat. Vapor/Mist and dust respirator assigned protection factor = 10. Use this type of respirator if the system of local or general ventilation is not adequate; engineering controls are not feasible, and the exposure limit is exceeded and airborne concentrations are up to 50 mg/m3. Be sure to use an approved/certified respirator or equivalent. Gloves (impervious).

**Personal Protection in Case of a Large Spill**
Splash goggles. Full suit. Vapor/Mist and dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. For concentrations of 125 mg/m3 use a supplied-air or air-purifying respirator with dust and mist filter operated in a continuous-flow mode (assigned protection factor = 25). For concentrations of 250 mg/m3 use a powered, air-purifying full-face respirator with a high-efficiency particulate filter (assigned protection factor = 50). For concentrations of 1500 mg/m3 use an supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode (assigned protection factor = 2000). Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

**Exposure Limits**

- TWA: 5 (mg/m³) from OSHA (PEL) [United States]
- TWA: 5 (mg/m³) from ACGIH (TLV) [United States]
- TWA: 5 (mg/m³) from NIOSH [United States]
- TWA: 5 (mg/m³) [United Kingdom (UK)]
- TWA: 5 STEL: 10 (mg/m³) [Canada]

Consult local authorities for acceptable exposure limits.

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Continued on Next Page
### Section 9. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Physical state and appearance</th>
<th>Odor</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid. (Crystalline granules solid.)</td>
<td>Benzaldehyde-like odor. Bitter odor similar to almonds. (Slight.)</td>
<td>White.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Physical property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molecular Weight</td>
<td>242.23 g/mole</td>
</tr>
<tr>
<td>pH (1% soln/water)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>Not available.</td>
</tr>
<tr>
<td>Melting Point</td>
<td>103°C (217.4°F) - 106°C</td>
</tr>
<tr>
<td>Critical Temperature</td>
<td>Not available.</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>1.334 (Water = 1)</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>Not available.</td>
</tr>
<tr>
<td>Volatility</td>
<td>Not available.</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>Not available.</td>
</tr>
<tr>
<td>Water/Oil Dist. Coeff.</td>
<td>The product is more soluble in oil; log(oil/water) = 3.5</td>
</tr>
<tr>
<td>Ionicity (in Water)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Dispersion Properties</td>
<td>See solubility in water, diethyl ether, acetone.</td>
</tr>
<tr>
<td>Solubility</td>
<td>Soluble in diethyl ether, acetone. Very slightly soluble in cold water. Soluble in benzene, chloroform Slightly soluble in vegetable oils, alcohols Solubility in Water: 9.10 mg/l @ 25 deg. C.</td>
</tr>
</tbody>
</table>

### Section 10. Stability and Reactivity Data

<table>
<thead>
<tr>
<th>Stability</th>
<th>The product is stable.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instability Temperature</td>
<td>Not available.</td>
</tr>
<tr>
<td>Conditions of Instability</td>
<td>Heat, shock, friction, material drying out, incompatible materials. This material contains about 25-26% water for the purpose of reducing flammability and sensitivity. Care must be taken to prevent drying. Dry benzoyl peroxide may spontaneously explode, and may explode when overheated under confinement or heated over its melting point, and forms flammable products upon explosive decomposition above its melting point (103 degrees C). Also, a Risk of explosive decomposition exists with friction, shock, or concussion when Benzoyl Peroxide is dry.</td>
</tr>
<tr>
<td>Incompatibility with various substances</td>
<td>Reactive with reducing agents, combustible materials, organic materials, metals, acids, alkalis. The product may undergo hazardous decomposition, condensation or polymerization, it may become self-reactive under conditions of shock or increase in temperature or pressure.</td>
</tr>
<tr>
<td>Corrosivity</td>
<td>Non-corrosive in presence of glass.</td>
</tr>
<tr>
<td>Special Remarks on Reactivity</td>
<td>Benzoyl peroxide is a strong oxidant, reacting violently with reducing materials/easily oxidizable materials (such as ethers) and combustibles (such as paper, wood, oil, etc.). Violent reactions take place when this compound comes into contact with alcohols, amines, alkalies, many inorganic and organic acids, and polymerization accelerators (such as dimethylaniline). Benzoyl peroxide will attack some forms of rubber, plastics, and coatings, presenting potential for fire and explosion. When heated to over 50 degrees C, the reaction of benzoyl peroxide and charcoal is violent. Do not mix unless approximately 33% water is present. Do not let material dry out.</td>
</tr>
<tr>
<td>Special Remarks on Corrosivity</td>
<td>Not available.</td>
</tr>
<tr>
<td>Polymerization</td>
<td>Will not occur.</td>
</tr>
</tbody>
</table>

**Continued on Next Page**
Section 11. Toxicological Information

Routes of Entry
Absorbed through skin. Inhalation. Ingestion.

Toxicity to Animals
Acute oral toxicity (LD50): 5700 mg/kg [Mouse].

Chronic Effects on Humans
Carcinogenic effects: A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC.
Mutagenic effects: Mutagenic for mammalian somatic cells. Non-mutagenic for bacteria and/or yeast.

Other Toxic Effects on Humans
Hazardous in case of skin contact (irritant, sensitizer). Slightly hazardous in case of skin contact (permeator), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals
Not available.

Special Remarks on Chronic Effects on Humans
May cause cancer based on animal test data. May affect genetic material (mutagenic).

Special Remarks on other Toxic Effects on Humans
Acute Potential Health Effects:
Skin: Causes mild to moderate skin irritation with moderate erythema (redness), inflammation, swelling, stinging sensation, and itching. Skin dryness and peeling may occur. It can be absorbed through intact skin where it is converted to Benzoic acid.
Eyes: Causes eye irritation. Eye contact can cause conjunctivitis, and superficial corneal opacity. No permanent eye injury has been noted.
Inhalation: Inhalation of airborne concentrations greater than 12 mg/m3 can cause respiratory tract (nose, throat) with sore throat, coughing, wheezing, dyspnea.
Ingestion: May cause digestive tract/gastrointestinal tract irritation with abdominal pain, nausea, vomiting. It may affect the liver, kidneys and bladder, behavior/central nervous system (stupor, hallucinations, distorted perceptions), respiration (dyspnea).

Chronic Potential Health Effects:
Skin: Prolonged or repeated skin contact may cause allergic contact dermatitis. Skin dryness and peeling may also occur.
Inhalation: Prolonged or repeated inhalation may cause lung irritation. It may also cause bronchitis to develop with cough, phlegm, and/or shortness of breath.

Section 12. Ecological Information

Ecotoxicity
Ecotoxicity in water (LC50): 2 mg/l 96 hours [Fish (Poecilia reticulata (Guppy))].  2.9 ppm 48 hours [Daphnia].

BOD5 and COD
Not available.

Products of Biodegradation
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation
The product itself and its products of degradation are not toxic.

Special Remarks on the Products of Biodegradation
Not available.

Section 13. Disposal Considerations

Waste Disposal
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14. Transport Information

DOT Classification
CLASS 5.2: Organic peroxide. Type C

Identification
UNNA: 3104 : Organic peroxide type C, solid (Benzoyl peroxide)  PG: II

Special Provisions for Transport
Not available.

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### Section 15. Other Regulatory Information and Pictograms

#### Federal and State Regulations
- Rhode Island RTK hazardous substances: Benzoyl peroxide
- Pennsylvania RTK: Benzoyl peroxide
- Minnesota: Benzoyl peroxide
- Massachusetts RTK: Benzoyl peroxide
- Massachusetts spill list: Benzoyl peroxide
- New Jersey: Benzoyl peroxide
- New Jersey spill list: Benzoyl peroxide
- California Director's List of Hazardous Substances: Benzoyl peroxide
- TSCA 8(b) inventory: Benzoyl peroxide
- SARA 313 toxic chemical notification and release reporting: Benzoyl peroxide

#### California Proposition 65
- California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: No products were found.
- California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: No products were found.

#### Other Regulations
- EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances (EINECS No. 202-327-6).
- Canada: Listed on Canadian Domestic Substance List (DSL).
- China: Listed on National Inventory.
- Japan: Listed on National Inventory (ENCS).
- Korea: Listed on National Inventory (KECI).
- Philippines: Listed on National Inventory (PICCS).
- Australia: Listed on AICS.

#### Other Classifications
- WHMIS (Canada)
  - CLASS C: Oxidizing material.
  - CLASS D-2B: Material causing other toxic effects (TOXIC).
  - CLASS F: Dangerously reactive material.
- DSCL (EEC)
  - R3- Extreme risk of explosion by shock, friction, fire or other sources of ignition.
  - R7- May cause fire.
  - R36- Irritating to eyes.
  - R43- May cause sensitization by skin contact.
- S3/14- Keep in a cool place away from [***]
- S7- Keep container tightly closed.
- S36/37/39- Wear suitable protective clothing, gloves and eye/face protection.

#### HMIS (U.S.A.)
- Health Hazard: 2
- Fire Hazard: 1
- Reactivity: 3

#### National Fire Protection Association (U.S.A.)
- Health: 2
- Flammability: 4
- Reactivity: 4

#### WHMIS (Canada) (Pictograms)

#### DSCL (Europe) (Pictograms)

#### TDG (Canada) (Pictograms)

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Protective Equipment

- Gloves (impervious).
- Synthetic apron.
- Vapor and dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.
- Splash goggles.

Section 16. Other Information

<table>
<thead>
<tr>
<th>MSDS Code</th>
<th>B3440</th>
</tr>
</thead>
<tbody>
<tr>
<td>References</td>
<td>Not available.</td>
</tr>
<tr>
<td>Other Special Considerations</td>
<td>Not available.</td>
</tr>
</tbody>
</table>


CALL (310) 516-8000

Notice to Reader

All chemicals may pose unknown hazards and should be used with caution. This Material Safety Data Sheet (MSDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. It shall be the user’s responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this MSDS is based on technical data judged to be reliable, Spectrum Quality Products, Inc. assumes no responsibility for the completeness or accuracy of the information contained herein.

Contact Distributor

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info@qualityexcipients.com