## Product

<table>
<thead>
<tr>
<th>Item #</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>EB-PMK-Preps</td>
<td>EB Pure Plasmid Mini-Prep Kit</td>
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## Components

<table>
<thead>
<tr>
<th>Components</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>PMK-DWB-Preps-PC</td>
<td>EB-PMK DNA Wash Buffer</td>
</tr>
<tr>
<td>PMK-E-Preps-PC</td>
<td>EB-PMK Elution Buffer</td>
</tr>
<tr>
<td>PMK-HB-Preps-PC</td>
<td>EB-PMK HBC Buffer</td>
</tr>
<tr>
<td>PMK-R-Preps-PC</td>
<td>EB-PMK RNase A</td>
</tr>
<tr>
<td>PMK-S1-Preps-PC</td>
<td>EB-PMK Solution 1</td>
</tr>
<tr>
<td>PMK-S2-Preps-PC</td>
<td>EB-PMK Solution 2</td>
</tr>
<tr>
<td>PMK-S3-Preps-PC</td>
<td>EB-PMK Solution 3</td>
</tr>
</tbody>
</table>
SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Title: EB-PMK DNA Wash Buffer
Item number: PMK-DWB-Preps-PC
Document Number: PC-MSDS-038 Version 001
Relevant identified uses of the substance or mixture and uses advised against: For research use only.
Application of the substance / the mixture
Details of the supplier of the safety data sheet
Manufacturer/Supplier:
Empirical Bioscience
2007 EastCastle Dr SE
Grand Rapids, MI 49508 U.S.A.
1-877.479.9949
MSDS author; customer.service@empiricalbioscience.com

SECTION 2 — COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Hazardous Ingredients (specific)</th>
<th>%</th>
<th>CAS Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixture of Non-Hazardous Substances</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SECTION 3 — HAZARDS IDENTIFICATION

Labeling according to Regulation (EC) No 1272/2008: Void
Hazard pictograms: Not Applicable
Signal Word: Not Applicable
Hazard statements: Not Applicable.
Precautionary Statements: Not Applicable.
Hazard Classification:
OSHA Hazard Overview: Not Applicable
Health Hazards: Not Applicable
Potential Health Effects: Not Applicable
Symptoms of Overexposure:
Inhalation: Not Applicable.
Skin: Not Applicable.
Eyes: Not Applicable.
Ingestion: Not Applicable.

Carcinogenicity:
IARC: No ingredient 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 ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by ACGIH.
OSHA: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by OSHA.
NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by NTP.

SECTION 4 — FIRST AID MEASURES

Description of first aid measures
General information: Wear protective gloves/protective clothing/eye protection/face protection.
After inhalation: If not breathing, give artificial respiration.
After skin contact: Wash Skin with soap and water.
After eye contact: Remove contact lenses, if present and easy to do. Continue rinsing.
After swallowing: N/A
Most important symptoms and effects, both acute and delayed: N/A
Indication of any immediate medical attention and special treatment needed: Treat symptomatically. Symptoms may be delayed.
Product Title: EB-PMK DNA Wash Buffer

SECTION 5 — FIRE FIGHTING MEASURES

- **Conditions of Flammability:** Not flammable or combustible.
- **Suitable Extinguishing Agents:** CO2, extinguishing powder, water spray, or alcohol resistant foam.
- **Hazardous Combustion Products:** Not Applicable.
- **Protective Equipment for Firefighters:** Wear NIOSH-approved self-contained breathing apparatus if necessary.
- **Further Information:** Prevent firefighting water from entering surface water or groundwater.

SECTION 6 — ACCIDENTAL RELEASE MEASURES

- **Personal Precautions:** Avoid breathing vapors or mist. See Section 8: Exposure Controls/Personal Protection for more details.
- **Environmental Precautions:** N/A
- **Emergency Procedures:** Evacuate personnel to safe areas and follow emergency response protocols.
- **Methods and material for containment and cleaning up:** Use inert absorbent material to soak up spill.

SECTION 7 — HANDLING AND STORAGE

- **Precautions for Safe Handling:** Handle in accordance with good chemical hygiene and safety practices. Protect from moisture. Avoid contact with skin and eyes. Avoid inhalation of vapors or mist.
- **Conditions for safe storage:** Keep container tightly closed in a dry, well-ventilated place.
- **Incompatible Products:** N/A

SECTION 8 — EXPOSURE CONTROL / PERSONAL PROTECTION

- **Appropriate Engineering Controls:** Adequate ventilation and access to eye washing stations are required.
- **Personal protective equipment:**
  - **Hand Protection:** Use gloves when handling this product. Inspect gloves prior to use for any visible damage. Use proper glove removal technique to prevent contact with skin. Dispose of gloves in accordance with applicable laws. Wash and dry hands after use.
  - **Eye Protection:** Wear a face shield and/or safety goggles when handling this product. Use NIOSH-approved eyewear.
  - **Skin and Body Protection:** Wear appropriate laboratory attire when handling this product, such as gloves, long pants, closed-toe shoes, and a laboratory coat.
  - **Respiratory Protection:** If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level, an approved respirator must be used.
  - **Hygiene Measures:** Avoid contact with eyes, skin, and clothing. Wash hands thoroughly after using this product. Do not eat, drink, or smoke when handling this product.
- **Special Requirements for PPE, Clothing, Respirators, etc:** N/A
- **Components with Workplace Control Parameters:** N/A

---

**Hazardous Combustion Products:** Not Applicable.

**Protective Equipment for Firefighters:** Wear NIOSH-approved self-contained breathing apparatus if necessary.

**Further Information:** Prevent firefighting water from entering surface water or groundwater.

**Environmental Precautions:** N/A

**Emergency Procedures:** Evacuate personnel to safe areas and follow emergency response protocols.

**Methods and material for containment and cleaning up:** Use inert absorbent material to soak up spill.

**Precautions for Safe Handling:** Handle in accordance with good chemical hygiene and safety practices. Protect from moisture. Avoid contact with skin and eyes. Avoid inhalation of vapors or mist.

**Conditions for safe storage:** Keep container tightly closed in a dry, well-ventilated place.

**Incompatible Products:** N/A

**Appropriate Engineering Controls:** Adequate ventilation and access to eye washing stations are required.

**Personal protective equipment:**
  - **Hand Protection:** Use gloves when handling this product. Inspect gloves prior to use for any visible damage. Use proper glove removal technique to prevent contact with skin. Dispose of gloves in accordance with applicable laws. Wash and dry hands after use.
  - **Eye Protection:** Wear a face shield and/or safety goggles when handling this product. Use NIOSH-approved eyewear.
  - **Skin and Body Protection:** Wear appropriate laboratory attire when handling this product, such as gloves, long pants, closed-toe shoes, and a laboratory coat.
  - **Respiratory Protection:** If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level, an approved respirator must be used.
  - **Hygiene Measures:** Avoid contact with eyes, skin, and clothing. Wash hands thoroughly after using this product. Do not eat, drink, or smoke when handling this product.

**Special Requirements for PPE, Clothing, Respirators, etc:** N/A

**Components with Workplace Control Parameters:** N/A
SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

Appearance:
- Form: Liquid
- Color: Colorless

Odor: No data available
Odor threshold: No data available
pH-value at 20 °C (68 °F): 7.0 - 9.0
Melting point/Melting range: No data available
Boiling point/Boiling range: No data available
Flash point: No data available
Flammability (solid, gaseous): No data available
Ignition temperature: No data available
Decomposition temperature: No data available
Auto igniting: No data available
Danger of explosion: No data available

Explosion limits:
- Lower: No data available
- Upper: No data available

Vapor pressure at 20 °C (68 °F): No data available
Density at 20 °C (68 °F): No data available
Relative density: No data available
Vapour density: No data available
Evaporation rate: No data available
Solubility in / Miscibility with Water: No data available
Partition coefficient (n-octanol/water): No data available
Viscosity: No data available
Dynamic: No data available
Kinematic: No data available
Solvent content: No data available
Organic Solvents: No data available
Water: No data available
Solids content: No data available
Other information: No data available

SECTION 10 — STABILITY AND REACTIVITY

Reactivity: No dangerous reactions known under conditions of normal use.
Chemical stability: Stable under recommended storage conditions.
Possibility of hazardous reactions: No data available.
Conditions to avoid: No data available.
Incompatible materials: No data available
Hazardous decomposition products: No data available
# Section 11 — Toxicological Information

**Information on Likely Routes of Exposure:**
- **Inhalation:** No data available.
- **Ingestion:** No data available.
- **Skin:** No data available.
- **Eyes:** No data available.

**Information on Toxicological Effects:**
- **Acute Toxicity:**
  - Oral LD50: No data available
  - Inhalation LD50: No data available
  - Dermal LD50: No data available
  - Other: Peritoneal LD50: No data available

- **Skin Corrosion/Irritation:** No data available

- **Serious Eye Damage/Irritation:** No data available

- **Respiratory or Skin Sensitization:** No data available

- **Germ Cell Mutagenicity:** No data available

**Carcinogenicity:**
- **IARC:** No ingredient 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 ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by ACGIH.
- **OSHA:** No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by OSHA.
- **NTP:** No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by NTP.

**Reproductive Toxicity:** No data available

**Teratogenicity:** No data available

**Specific Target Organ Toxicity — Single Exposure:** No data available

**Specific Target Organ Toxicity — Repeated Exposures:** No data available

**Aspiration Hazard:** No data available

**Signs and Symptoms of Exposure:** No data available

**Synergistic Effects:** No data available

**Additional Information:** No data available

---

# Section 12 — Ecological Information

**Toxicity:** No data available

**Persistence and Degradability:** No data available

**Bioaccumulative Potential:** No data available

**Mobility in Soil:** No data available

**Results of PBT and vPvB Assessment:**
- **PBT:** No data available
- **vPvB:** No data available

**Other Adverse Effects:** No data available

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# Section 13 — Disposal Considerations

**Product:** Disposal should be in accordance with applicable regional, national and local laws and regulations.  
- **S29:** Do not empty into drains.  
- **S57:** Use appropriate container to avoid environmental contamination. Refer to Section 7: Handling and Storage and Section 8: Exposure Control/Personal Protection for additional handling information and protection of employees.

**Contamination Packaging:** Disposal must be made according to official regulations. To minimize exposure, please refer to Section 8: Exposure Control/Personal Protection of this SDS.
SECTION 14 — TRANSPORT INFORMATION

<table>
<thead>
<tr>
<th>DOT:</th>
<th>Not considered dangerous goods</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMDG:</td>
<td>Not considered dangerous goods</td>
</tr>
<tr>
<td>IATA:</td>
<td>Not considered dangerous goods</td>
</tr>
</tbody>
</table>

SECTION 15 — REGULATORY INFORMATION

**US Federal Regulations**

- **OSHA Hazards:** No data available.
- **Aggravated Medical Conditions:** No data available.
- **Symptoms of Overexposure:**
  - Inhalation: No data available.
  - Skin: No data available.
  - Eyes: No data available.
  - Ingestion: No data available

- **SARA 302 Components:** None present or none present in regulated quantities.
- **SARA 313 Components:** None present or none present in regulated quantities.
- **SARA 311/312 Hazards:** No data available.

**US State Regulation:**

- **California Prop. 65:** No ingredients regulated by CA Prop 65 present.
- **New Jersey & Community RTK:** Component (Water); CAS No (7732-18-5)
- **Massachusetts RTK:** No ingredients regulated by MS Right to Know Act present.
- **Pennsylvania RTK:** Component (Water); CAS No (7732-18-5)
- **Rhode Island RTK:** No ingredients regulated by RI Right to Know Act present

SECTION 16 — OTHER INFORMATION

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Department issuing MSDS
Empirical Bioscience
2007 Eastcastle Dr SE
Grand Rapids, MI 49508 U.S.A.
1-877.479.9949

**Abbreviations and acronyms:**

- **ADR:** Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
- **IMDG:** International Maritime Code for Dangerous Goods
- **DOT:** US Department of Transportation
- **IATA:** International Air Transport Association
- **CAS:** Chemical Abstracts Service (division of the American Chemical Society)
- **NFPA:** National Fire Protection Association (USA)
- **HMIS:** Hazardous Materials Identification System (USA)
- **LC50:** Lethal concentration, 50 percent
- **LD50:** Lethal dose, 50

* Data compared to the previous version altered.
Product Title: EB-PMK Elution Buffer

SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Title: EB-PMK Elution Buffer
Item number: PMK-E-Preps-PC
Document Number: PC-MSDS-039 Version 001
Relevant identified uses of the substance or mixture and uses advised against: For research use only.
Application of the substance / the mixture
Details of the supplier of the safety data sheet
Manufacturer/Supplier:
Empirical Bioscience
2007 EastCastle Dr SE
Grand Rapids, MI 49508 U.S.A.
1-877.479.9949
MSDS author: customer.service@empiricalbioscience.com

SECTION 2 — COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Hazardous Ingredients (specific)</th>
<th>%</th>
<th>CAS Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixture of Non-Hazardous Substances</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SECTION 3 — HAZARDS IDENTIFICATION

Labeling according to Regulation (EC) No 1272/2008: Void
Hazard pictograms: Not Applicable
Signal Word: Not Applicable
Hazard statements: Not Applicable.
Precautionary Statements: Not Applicable.
Hazard Classification:
  OSHA Hazard Overview: Not Applicable
  Health Hazards: Not Applicable
Potential Health Effects: Not Applicable
  Symptoms of Overexposure:
    Inhalation: Not Applicable.
    Skin: Not Applicable.
    Eyes: Not Applicable.
    Ingestion: Not Applicable.
Carcinogenicity:
  IARC: No ingredient 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 ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by ACGIH.
  OSHA: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by OSHA.
  NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by NTP.

SECTION 4 — FIRST AID MEASURES

Description of first aid measures
General information: Wear protective gloves/protective clothing/eye protection/face protection.
After inhalation: If not breathing, give artificial respiration.
After skin contact: Wash Skin with soap and water.
After eye contact: Remove contact lenses, if present and easy to do. Continue rinsing.
After swallowing: N/A
Most important symptoms and effects, both acute and delayed: N/A
Indication of any immediate medical attention and special treatment needed: Treat symptomatically. Symptoms may be delayed.
SECTION 5 — FIRE FIGHTING MEASURES

Conditions of Flammability: Not flammable or combustible.
Suitable Extinguishing Agents: CO2, extinguishing powder, water spray, or alcohol resistant foam.
Hazardous Combustion Products: Not Applicable.
Protective Equipment for Firefighters: Wear NIOSH-approved self-contained breathing apparatus if necessary.
Further Information: Prevent firefighting water from entering surface water or groundwater.

SECTION 6 — ACCIDENTAL RELEASE MEASURES

Personal Precautions: Avoid breathing vapors or mist. See Section 8: Exposure Controls/Personal Protection for more details.
Environmental Precautions: N/A
Emergency Procedures: Evacuate personnel to safe areas and follow emergency response protocols.
Methods and material for containment and cleaning up: Use inert absorbent material to soak up spill.

SECTION 7 — HANDLING AND STORAGE

Precautions for Safe Handling: Handle in accordance with good chemical hygiene and safety practices. Protect from moisture. Avoid contact with skin and eyes. Avoid inhalation of vapors or mist.
Conditions for safe storage: Keep container tightly closed in a dry, well-ventilated place.
Incompatible Products: N/A

SECTION 8 — EXPOSURE CONTROL / PERSONAL PROTECTION

Appropriate Engineering Controls: Adequate ventilation and access to eye washing stations are required.
Personal protective equipment:

- Hand Protection: Use gloves when handling this product. Inspect gloves prior to use for any visible damage. Use proper glove removal technique to prevent contact with skin. Dispose of gloves in accordance with applicable laws. Wash and dry hands after use.
- Eye Protection: Wear a face shield and/or safety goggles when handling this product. Use NIOSH-approved eyewear.
- Skin and Body Protection: Wear appropriate laboratory attire when handling this product, such as gloves, long pants, closed-toe shoes, and a laboratory coat.
- Respiratory Protection: If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level, an approved respirator must be used.
- Hygiene Measures: Avoid contact with eyes, skin, and clothing. Wash hands thoroughly after using this product. Do not eat, drink, or smoke when handling this product.

Special Requirements for PPE, Clothing, Respirators, etc: N/A
Components with Workplace Control Parameters: N/A
SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td><strong>Appearance:</strong></td>
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<td>Form</td>
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<td>Color</td>
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<td>Odor</td>
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<td>Odor threshold</td>
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<td>pH-value at 20 °C (68 °F)</td>
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<td>Melting point/Melting range</td>
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<td>Flammability (solid, gaseous)</td>
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<td>Ignition temperature</td>
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<td>Decomposition temperature</td>
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<td><strong>Explosion limits:</strong></td>
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<td>Lower</td>
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<td>Water</td>
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<td>Solids content</td>
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<tr>
<td><strong>Other information:</strong></td>
<td></td>
</tr>
</tbody>
</table>

SECTION 10 — STABILITY AND REACTIVITY

**Reactivity:** No dangerous reactions known under conditions of normal use.
**Chemical stability:** Stable under recommended storage conditions.
**Possibility of hazardous reactions:** No data available.
**Conditions to avoid:** No data available.
**Incompatible materials:** No data available.
**Hazardous decomposition products:** No data available.
SECTION 11 — TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure:
- Inhalation: No data available.
- Ingestion: No data available.
- Skin: No data available.
- Eyes: No data available.

Information on toxicological effects:

Acute toxicity:
- Oral LD50: No data available
- Inhalation LD50: No data available
- Dermal LD50: No data available
- Other: Peritoneal LD50: No data available

Skin corrosion/irritation: No data available

Serious eye damage/irritation: No data available

Respiratory or skin sensitization: No data available

Germ cell mutagenicity: No data available

Carcinogenicity:
- IARC: No ingredient 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 ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by ACGIH.
- OSHA: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by OSHA.
- NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by NTP.

Reproductive Toxicity: No data available

Teratogenicity: No data available

Specific Target Organ Toxicity — Single Exposure: No data available

Specific Target Organ Toxicity — Repeated Exposures: No data available

Aspiration Hazard: No data available

Signs and symptoms of exposure: No data available

Synergistic effects: No data available

Additional information: No data available

SECTION 12 — ECOLOGICAL INFORMATION

Toxicity: No data available

Persistence and degradability: No data available

Bioaccumulative potential: No data available

Mobility in soil: No data available

Results of PBT and vPvB assessment:
- PBT: No data available
- vPvB: No data available

Other adverse effects: No data available

SECTION 13 — DISPOSAL CONSIDERATIONS

Product: Disposal should be in accordance with applicable regional, national and local laws and regulations. S29 – Do not empty into drains. S57 – Use appropriate container to avoid environmental contamination. Refer to Section 7: Handling and Storage and Section 8: Exposure Control/Personal Protection for additional handling information and protection of employees.

Contamination packaging: Disposal must be made according to official regulations. To minimize exposure, please refer to Section 8: Exposure Control/Personal Protection of this SDS.
SECTION 14 — TRANSPORT INFORMATION

DOT: Not considered dangerous goods
IMDG: Not considered dangerous goods
IATA: Not considered dangerous goods

SECTION 15 — REGULATORY INFORMATION

US Federal Regulations
OSHA Hazards: No data available.
Aggravated Medical Conditions: No data available.
Symptoms of Overexposure:
Inhalation: No data available.
Skin: No data available.
Eyes: No data available.
Ingestion: No data available.
SARA 302 Components: None present or none present in regulated quantities.
SARA 313 Components: None present or none present in regulated quantities.
SARA 311/312 Hazards: No data available.

US State Regulation:
California Prop. 65: No ingredients regulated by CA Prop 65 present.
New Jersey & Community RTK: Component (Water); CAS No (7732-18-5)
Massachusetts RTK: No ingredients regulated by MS Right to Know Act present.
Pennsylvania RTK: Component (Water); CAS No (7732-18-5)
Rhode Island RTK: No ingredients regulated by RI Right to Know Act present

SECTION 16 — OTHER INFORMATION

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.
Department issuing MSDS
Empirical Bioscience
2007 Eastcastle Dr SE
Grand Rapids, MI 49508 U.S.A.
1-877.479.9949

Abbreviations and acronyms:
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50
* Data compared to the previous version altered.
SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Title: EB-PMK HBC Buffer
Item number: PMK-HB-Preps-PC
Document Number: PC-MSDS-040 Version 001

Relevant identified uses of the substance or mixture and uses advised against: For research use only.

Application of the substance / the mixture
Details of the supplier of the safety data sheet
Manufacturer/Supplier:
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2007 EastCastle Dr SE
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MSDS author; customer.service@empiricalbioscience.com

SECTION 2 — COMPOSITION/INFORMATION ON INGREDIENTS

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<th>Hazardous Ingredients (specific)</th>
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<th>CAS Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guanidine Hydrochloride</td>
<td>25-50%</td>
<td>50-01-1</td>
</tr>
</tbody>
</table>

SECTION 3 — HAZARDS IDENTIFICATION

Classification of the substance or mixture
Classification according to the Hazard Communication Standard (HCS).
The product is not classified as hazardous according to the HCS regulation.
Labelling according to Regulation (EC) No 1272/2008 Void

Hazard pictograms:
Signal word: Warning

Hazard statements:
H302 Harmful if swallowed.
H315 Causes skin irritation,
H319 Causes serious eye irritation.
H332 Harmful if inhaled

Precautionary Statements:
P261 Avoid breathing dust/fumes/gas/mist/vapors/spray. P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P311 Call a poison center or doctor/physician.

Hazard Classification:
OSHA Hazard Overview (Criteria according to 29CFR1910.1200): Not applicable
Health Hazards: Acute Toxicity (oral) Category 4
Skin corrosion/irritation Category 2
Serious eye damage/eye irritation Category 2A
Specific organ toxicity – single exposure Category 3

Potential Health Effects: Aggravated Medical Conditions: May cause nervous system disturbances
Symptoms of Overexposure:
Inhalation: Harmful if inhaled. May cause respiratory tract irritation.
Skin: Harmful if absorbed through skin. May cause skin irritation.
Eyes: Causes eye irritation.
Ingestion: Harmful if swallowed.

Carcinogenicity:
IARC: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by IARCvPvB: Not applicable
ACGIH: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by ACGIH.
OSHA: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by OSHA.
NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by NTP.
SECTION 4 — FIRST AID MEASURES

Description of first aid measures
General information: Exit to a safe area. Consult a physician. Seek medical attention.
After inhalation: Remove to fresh air. If not breathing, give artificial respiration. Seek medical attention.
After skin contact: Exit to safe area. Wash skin with soap and copious amounts of water. Seek medical attention.
After eye contact: Flush eyes with clean water for a minimum of 15 minutes keeping eyes open. Seek medical attention.
After swallowing: Rinse mouth with water. Never give anything by mouth to an unconscious person. Seek medical attention.
Most important symptoms and effects, both acute and delayed: Irritating to eyes, respiratory system, and skin. Narcotic effect.
Indication of any immediate medical attention and special treatment needed: Treat symptomatically. Symptoms may be delayed.

SECTION 5 — FIRE FIGHTING MEASURES

Conditions of Flammability: Not flammable or combustible.
Suitable Extinguishing Agents: CO2, extinguishing powder, water spray, or regular foam.
Hazardous Combustion Products: Carbon oxides (CO, CO₂), nitrogen oxides (NOx), hydrogen chloride gas.
Protective Equipment for Firefighters: Wear NIOSH-approved self-contained breathing apparatus, if necessary.
Further Information: Prevent firefighting water from entering surface water or groundwater.

SECTION 6 — ACCIDENTAL RELEASE MEASURES

Personal Precautions: Wear respiratory protection when ventilation is inadequate. Avoid breathing vapors, mist, or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Keep away from heat and sources of ignition. See Section 8: Exposure Controls/Personal Protection for more details.
Environmental Precautions: Prevent further leakage if area is safe. Do not let product enter drains. Avoid discharge into the environment.
Emergency Procedures: Evacuate personnel to safe areas and follow emergency response protocols.
Methods and material for containment and cleaning up: Use inert absorbent material to soak up spill. Dispose of hazardous waste. Do not flush with water.

SECTION 7 — HANDLING AND STORAGE

Precautions for Safe Handling: Handle in accordance with good chemical hygiene and safety practices. Protect from moisture. Avoid contact with skin and eyes. Avoid inhalation of vapors or mist.
Conditions for storage: Keep container tightly closed in a dry, cool, and well-ventilated place. Protect from moisture.
Incompatible Products: Oxidizers

SECTION 8 — EXPOSURE CONTROL / PERSONAL PROTECTION

Appropriate Engineering Controls: Adequate ventilation and access to eye washing stations are required.
Personal protective equipment:
Hand Protection: Use gloves when handling this product. Inspect gloves prior to use for any visible damage. Use proper glove removal technique to prevent contact with skin. Dispose of gloves in accordance with applicable laws. Wash and dry hands after use.
Eye Protection: Wear a face shield and/or safety goggles when handling this product. Use NIOSH-approved eyewear.
Skin and Body Protection: Wear appropriate laboratory attire when handling this product, such as gloves, long pants, closed-toe shoes, and a laboratory coat.
Respiratory Protection: If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level, an approved respirator must be used.
Hygiene Measures: Avoid contact with eyes, skin, and clothing. Wash hands thoroughly after using this product. Do not eat, drink, or smoke when handling this product.
Special Requirements for PPE, Clothing, Respirators, etc: N/A
SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance:</td>
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</tr>
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<td>Form</td>
<td>Liquid</td>
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<tr>
<td>Color</td>
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</tr>
<tr>
<td>Odor threshold</td>
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<td>pH-value at 20 °C (68 °F)</td>
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<td>Boiling point/Boiling range</td>
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<td>Flash point</td>
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<td>Decomposition temperature</td>
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<td>Other information</td>
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SECTION 10 — STABILITY AND REACTIVITY

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<th>Property</th>
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</thead>
<tbody>
<tr>
<td>Reactivity:</td>
<td>No dangerous reaction known to occur under conditions of normal use.</td>
</tr>
<tr>
<td>Chemical stability:</td>
<td>Stable under recommended storage conditions.</td>
</tr>
<tr>
<td>Possibility of hazardous reactions:</td>
<td>Hazardous polymerization does not occur.</td>
</tr>
<tr>
<td>Conditions to avoid:</td>
<td>Contact with incompatible materials; excessive heat.</td>
</tr>
<tr>
<td>Incompatible materials:</td>
<td>Strong oxidizing agents, strong acids, inorganic salts, chlorinated compounds.</td>
</tr>
<tr>
<td>Hazardous decomposition products:</td>
<td>Carbon oxides, nitrogen oxides (NOx), hydrogen chloride gas.</td>
</tr>
</tbody>
</table>
SECTION 11 — TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure:
- Inhalation: Harmful if inhaled. May cause respiratory tract irritation.
- Ingestion: Harmful if swallowed.
- Skin: Causes skin irritation.
- Eyes: Causes serious eye irritation.

Information on toxicological effects:
- **Acute toxicity**
  - Oral LD50: 1,900 mg/kg (Rat)
  - Inhalation LD50: No data available
  - Dermal LD50: 2,000 mg/kg (Rabbit)
- **Skin corrosion/irritation**: Causes skin irritation.
- **Serious eye damage/irritation**: Causes serious eye irritation.
- **Respiratory or skin sensitization**: Components of this product may be absorbed into the body through the skin. Irritating to skin and mucous membranes.
- **Germ cell mutagenicity**: No mutagenic compounds identified.

**Carcinogenicity**
- **IARC**: No ingredient 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 ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by ACGIH.
- **OSHA**: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by OSHA.
- **NTP**: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by NTP.

**Reproductive Toxicity**: No component toxic to reproduction.

**Teratogenicity**: No data available.

**Specific Target Organ Toxicity – Single Exposure**: Respiratory tract irritation.

**Specific Target Organ Toxicity – Repeated Exposures**: No data available.

**Aspiration Hazard**: No data available.

**Signs and symptoms of exposure**: Irritating to eyes, respiratory system, and skin. Narcotic effect.

**Synergistic effects**: No data available.

**Additional information**: None known.

SECTION 12 — ECOLOGICAL INFORMATION

**Toxicity**
- **GNC**: No data available

**Persistence and degradability**: No data available

**Bioaccumulative potential**: No data available

**Mobility in soil**: Product is water soluble and may spread in water systems.

**Results of PBT and vPvB assessment**
- **PBT**: No data available
- **vPvB**: No data available

**Other adverse effects**: The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.
SECTION 13 — DISPOSAL CONSIDERATIONS

Product: Disposal should be in accordance with applicable regional, national and local laws and regulations.

S29 – Do not empty into drains.
S57 – Use appropriate container to avoid environmental contamination.

Contamination packaging: Disposal must be made according to official regulations. To minimize exposure, please refer to Section 8: Exposure Control/Personal Protection of this SDS.

SECTION 14 — TRANSPORT INFORMATION

DOT: Not regulated.
IMDG: Not regulated.
IATA: Not regulated.

SECTION 15 — REGULATORY INFORMATION

US Federal Regulations
OSHA Hazards:
Aggravated Medical Conditions: May cause nervous system disturbances.
Symptoms of Overexposure:
Inhalation: Harmful if inhaled. May cause respiratory irritation.
Skin: Harmful if absorbed through the skin. May cause skin irritation.
Eyes: Causes serious eye irritation.
Ingestion: Harmful if swallowed.

SARA 302 Components: None present or none present in regulated quantities.
SARA 313 Components: None present or none present in regulated quantities.
SARA 311/312 Hazards: Acute health hazard, chronic health hazard.

US State Regulation:
California Prop. 65: No ingredients regulated by CA Prop 65 present.
New Jersey & Community RTK: No ingredients regulated by NJ Right to Know Act present.
Massachusetts RTK: No ingredients regulated by MA Right to Know Act present.
Pennsylvania RTK: No ingredients regulated by PA Right to Know Act present.
Rhode Island RTK: No ingredients regulated by RI Right to Know Act present.

SECTION 16 — OTHER INFORMATION

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Department issuing MSDS
Empirical Bioscience
2007 Eastcastle Dr SE
Grand Rapids, MI 49508 U.S.A.
1-877.479.9949

Abbreviations and acronyms:
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50

* Data compared to the previous version altered.
SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Title: EB-PMK RNase A
Item number: PMK-R-Preps-PC
Document Number: PC-MSDS-041 Version 001

Relevant identified uses of the substance or mixture and uses advised against: For research use only.
Application of the substance / the mixture

Manufacturer/Supplier: Empirical Bioscience
2007 EastCastle Dr SE
Grand Rapids, MI 49508 U.S.A.
1-877.479.9949
MSDS author; customer.service@empiricalbioscience.com

SECTION 2 — COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Hazardous Ingredients (specific)</th>
<th>%</th>
<th>CAS Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glycerol</td>
<td>30-60%</td>
<td>56-81-5</td>
</tr>
<tr>
<td>RNase</td>
<td>1-3%</td>
<td>9001-99-4</td>
</tr>
</tbody>
</table>

SECTION 3 — HAZARDS IDENTIFICATION

Labeling according to Regulation (EC) No 1272/2008: Void

Hazard pictograms: 
Signal word: Not Applicable
Hazard statements: H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Precautionary Statements:
- P261 Avoid breathing dust/fumes/gas/mist/vapors/spray.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- P284 In case of inadequate ventilation, wear respiratory protection.
- P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a comfortable position for breathing.
- P332 + P313 IF SKIN IRRITATION OCCURS: Get medical advice/attention.
- P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a comfortable position for breathing.
- P332 + P313 IF SKIN IRRITATION OCCURS: Get medical advice/attention.
- P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a comfortable position for breathing.
- P332 + P313 IF SKIN IRRITATION OCCURS: Get medical advice/attention.
- P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a comfortable position for breathing.
- P332 + P313 IF SKIN IRRITATION OCCURS: Get medical advice/attention.

Hazard Classification:
- OSHA Hazard Overview (Criteria according to 29CFR1910.1200): Not applicable
- Health Hazards: Respiratory Sensitizer Category 1

SECTION 4 — FIRST AID MEASURES

Description of first aid measures
General information: Exit to a safe area. Consult a physician.
After inhalation: Remove to fresh air. If not breathing, give artificial respiration. Seek medical attention.
After skin contact: Exit to safe area. Wash Skin with soap and copious amounts of water. Seek medical attention.
After eye contact: Flush eyes with clean water for a minimum of 15 minutes keeping eyes open. Seek medical attention.
After swallowing: Rinse mouth with water. Never give anything by mouth to an unconscious person. Seek medical attention.
Most important symptoms and effects, both acute and delayed: N/A
Indication of any immediate medical attention and special treatment needed: Treat symptomatically. Symptoms may be delayed.

SECTION 5 — FIRE FIGHTING MEASURES

Conditions of Flammability: Not flammable or combustible.
Suitable Extinguishing Agents: CO2, extinguishing powder, water spray, or regular foam.
Hazardous Combustion Products: Carbon oxides (CO, CO2), nitrogen oxides (NOx), hydrogen chloride gas.
Protective Equipment for Firefighters: Wear NIOSH-approved self-contained breathing apparatus, if necessary.
Further Information: Prevent firefighting water from entering surface water or groundwater.
SECTION 6 — ACCIDENTAL RELEASE MEASURES

**Personal Precautions:** Wear personal protective equipment. Avoid breathing vapors, mist, or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Keep away from heat and sources of ignition. See Section 8: Exposure Controls/Personal Protection for more details.

**Environmental Precautions:** Do not let product enter drains.

**Emergency Procedures:** Evacuate personnel to safe areas and follow emergency response protocols.

**Methods and material for containment and cleaning up:** Use inert absorbent material to soak up spill. Keep waste in suitable, closed containers for disposal.

SECTION 7 — HANDLING AND STORAGE

**Precautions for Safe Handling:** Handle in accordance with good chemical hygiene and safety practices. Avoid inhalation of vapors or mist.

**Conditions for safe storage:** Store at 2-8°C. Keep container tightly closed.

**Incompatible Products:** Strong oxidizers.

SECTION 8 — EXPOSURE CONTROL / PERSONAL PROTECTION

**Appropriate Engineering Controls:** Adequate ventilation and access to eye washing stations are required.

**Personal protective equipment:**
- **Hand Protection:** Use gloves when handling this product. Inspect gloves prior to use for any visible damage. Use proper glove removal technique to prevent contact with skin. Dispose of gloves in accordance with applicable laws. Wash and dry hands after use.
- **Eye Protection:** Wear a face shield and/or safety goggles when handling this product. Use NIOSH-approved eyewear.
- **Skin and Body Protection:** Wear appropriate laboratory attire when handling this product, such as gloves, long pants, closed-toe shoes, and a laboratory coat.
- **Respiratory Protection:** If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level, an approved respirator must be used.
- **Hygiene Measures:** Avoid contact with eyes, skin, and clothing. Wash hands thoroughly after using this product. Do not eat, drink, or smoke when handling this product.

**Special Requirements for PPE, Clothing, Respirators, etc:** N/A

**Components with Workplace Control Parameters:**

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No.</th>
<th>Value</th>
<th>Control Parameters</th>
<th>Basis</th>
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<tbody>
<tr>
<td>Glycerol</td>
<td>56-81-5</td>
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<td>Table Z-1</td>
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<td>PEL</td>
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<td>USA. OSHA</td>
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<tr>
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<td>TWA</td>
<td>10 mg/m³</td>
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<tr>
<td>Threshold Limit</td>
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</table>
SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

Appearance:
- Form: Liquid
- Color: Colorless
Odor: No data available
Odor threshold: No data available
pH-value at 20 °C (68 °F): No data available
Melting point/Melting range: No data available
Boiling point/Boiling range: No data available
Flash point: No data available
Flammability (solid, gaseous): No data available
Ignition temperature: No data available
Decomposition temperature: No data available
Auto igniting: No data available
Danger of explosion: No data available
Explosion limits:
- Lower: No data available
- Upper: No data available
Vapor pressure at 20 °C (68 °F): No data available
Density at 20 °C (68 °F): No data available
Relative density: No data available
Vapour density: No data available
Evaporation rate: No data available
Solubility in / Miscibility with Water: No data available
Partition coefficient (n-octanol/water): No data available
Viscosity: No data available
Dynamic: No data available
Kinematic: No data available
Solvent content: No data available
Organic Solvents: No data available
Water: No data available
Solids content: No data available
Other information: No data available

SECTION 10 — STABILITY AND REACTIVITY

Reactivity: No dangerous reaction known to occur under conditions of normal use.
Chemical stability: Stable under recommended storage conditions.
Possibility of hazardous reactions: None under normal processing.
Conditions to avoid: Extreme temperatures, direct sunlight.
Incompatible materials: Strong oxidizing agents.
Hazardous decomposition products: No data available.
SECTION 11 — TOXICOLOGICAL INFORMATION

Information on toxicological effects:

- **Acute toxicity**
  - Oral LD50: 12,600 mg/kg (Rat)
  - Inhalation LD50: No data available
  - Dermal LD50: >10,000 mg/kg (Rabbit)
- **Skin corrosion/irritation**: Mild skin irritation, 24 hours (rabbit).
- **Serious eye damage/irritation**: Mild eye irritation, 24 hours (rabbit).
- **Respiratory or skin sensitization**: No data available
- **Germ cell mutagenicity**: No data available.

**Carcinogenicity**
- **IARC**: No ingredient 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 ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by ACGIH.
- **OSHA**: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by OSHA.
- **NTP**: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by NTP.

**Reproductive Toxicity**: No data available.
**Teratogenicity**: No data available.
**Specific Target Organ Toxicity – Single Exposure**: No data available.
**Specific Target Organ Toxicity – Repeated Exposures**: No data available.
**Aspiration Hazard**: No data available.
**Signs and symptoms of exposure**: Prolonged or repeated exposure may cause headache, nausea, vomiting.
**Synergistic effects**: No data available.
**Additional information**: Kidney: Irregularities – Based on human evidence (Glycerol)

SECTION 12 — ECOLOGICAL INFORMATION

- **Toxicity**: No data available
- **Persistence and degradability**: No data available
- **Bioaccumulative potential**: No data available
- **Mobility in soil**: No data available
- **Results of PBT and vPvB assessment**:
  - PBT: No data available
  - vPvB: No data available
- **Other adverse effects**: No data available.

SECTION 13 — DISPOSAL CONSIDERATIONS

- **Product**: Disposal should be in accordance with applicable regional, national and local laws and regulations.
  - S29 – Do not empty into drains.
  - S57 – Use appropriate container to avoid environmental contamination.
  - Refer to Section 7: Handling and Storage and Section 8: Exposure Control/Personal Protection for additional handling information and protection of employees.
- **Contamination packaging**: Disposal must be made according to official regulations. To minimize exposure, please refer to Section 8: Exposure Control/Personal Protection of this SDS.
SECTION 14 — TRANSPORT INFORMATION

**DOT:** Not regulated.
**IMDG:** Not regulated.
**IATA:** Not regulated.

SECTION 15 — REGULATORY INFORMATION

**US Federal Regulations**
- SARA 302 Components: None present or none present in regulated quantities.
- SARA 313 Components: None present or none present in regulated quantities.
- SARA 311/312 Hazards: Acute health hazard.

**US State Regulation:**
- California Prop. 65: No ingredients regulated by CA Prop 65 present.
- New Jersey & Community RTK: No ingredients regulated by NJ Right to Know Act present.
- Massachusetts RTK: No ingredients regulated by MA Right to Know Act present.
- Pennsylvania RTK: No ingredients regulated by PA Right to Know Act present.
- Rhode Island RTK: No ingredients regulated by RI Right to Know Act present.

SECTION 16 — OTHER INFORMATION

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Department issuing MSDS
Empirical Bioscience
2007 Eastcastle Dr SE
Grand Rapids, MI 49508 U.S.A.
1-877.479.9949

**Abbreviations and acronyms:**
- **ADR:** Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
- **IMDG:** International Maritime Code for Dangerous Goods
- **DOT:** US Department of Transportation
- **IATA:** International Air Transport Association
- **CAS:** Chemical Abstracts Service (division of the American Chemical Society)
- **NFPA:** National Fire Protection Association (USA)
- **HMIS:** Hazardous Materials Identification System (USA)
- **LC50:** Lethal concentration, 50 percent
- **LD50:** Lethal dose, 50

* Data compared to the previous version altered.
MATERIAL SAFETY DATA SHEET

Product Title: EB-PMK Solution 1

SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Title: EB-PMK Solution 1
Item number: PMK-S1-Preps-PC
Document Number: PC-MSDS-042 Version 001
Relevant identified uses of the substance or mixture and uses advised against: For research use only.
Application of the substance / the mixture
Details of the supplier of the safety data sheet
Manufacturer/Supplier:
Empirical Bioscience
2007 EastCastle Dr SE
Grand Rapids, MI 49508 U.S.A.
1-877-479.9949
MSDS author; customer.service@empiricalbioscience.com

SECTION 2 — COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Hazardous Ingredients (specific)</th>
<th>%</th>
<th>CAS Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixture of Non-Hazardous Substances</td>
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<td></td>
</tr>
</tbody>
</table>

SECTION 3 — HAZARDS IDENTIFICATION

Labeling according to Regulation (EC) No 1272/2008: Void
Hazard pictograms: Not Applicable
Signal Word: Not Applicable
Hazard statements: Not Applicable.
Precautionary Statements: Not Applicable.
Hazard Classification:
  - OSHA Hazard Overview: Not Applicable
  - Health Hazards: Not Applicable
Potential Health Effects:
  - Symptoms of Overexposure:
    - Inhalation: Not Applicable
    - Skin: Not Applicable
    - Eyes: Not Applicable
  - Ingestion: Not Applicable
Carcinogenicity:
  - IARC: No ingredient 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 ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by ACGIH.
  - OSHA: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by OSHA.
  - NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by NTP.

SECTION 4 — FIRST AID MEASURES

Description of first aid measures
General information: Wear protective gloves/protective clothing/eye protection/face protection.
After Inhalation: If not breathing, give artificial respiration.
After skin contact: Wash Skin with soap and water.
After eye contact: Remove contact lenses, if present and easy to do. Continue rinsing.
After swallowing: N/A
Most important symptoms and effects, both acute and delayed: N/A
Indication of any immediate medical attention and special treatment needed: Treat symptomatically. Symptoms may be delayed.
SECTION 5 — FIRE FIGHTING MEASURES

Conditions of Flammability: Not flammable or combustible.
Suitable Extinguishing Agents: CO2, extinguishing powder, water spray, or alcohol resistant foam.
Hazardous Combustion Products: Not Applicable.
Protective Equipment for Firefighters: Wear NIOSH-approved self-contained breathing apparatus if necessary.
Further Information: Prevent firefighting water from entering surface water or groundwater.

SECTION 6 — ACCIDENTAL RELEASE MEASURES

Personal Precautions: Avoid breathing vapors or mist. See Section 8: Exposure Controls/Personal Protection for more details.
Environmental Precautions: N/A
Emergency Procedures: Evacuate personnel to safe areas and follow emergency response protocols.
Methods and material for containment and cleaning up: Use inert absorbent material to soak up spill.

SECTION 7 — HANDLING AND STORAGE

Precautions for Safe Handling: Handle in accordance with good chemical hygiene and safety practices. Protect from moisture. Avoid contact with skin and eyes. Avoid inhalation of vapors or mist.
Conditions for safe storage: Keep container tightly closed in a dry, well-ventilated place.
Incompatible Products: N/A

SECTION 8 — EXPOSURE CONTROL / PERSONAL PROTECTION

Appropriate Engineering Controls: Adequate ventilation and access to eye washing stations are required.
Personal protective equipment:
Hand Protection: Use gloves when handling this product. Inspect gloves prior to use for any visible damage. Use proper glove removal technique to prevent contact with skin. Dispose of gloves in accordance with applicable laws. Wash and dry hands after use.
Eye Protection: Wear a face shield and/or safety goggles when handling this product. Use NIOSH-approved eyewear.
Skin and Body Protection: Wear appropriate laboratory attire when handling this product, such as gloves, long pants, closed-toe shoes, and a laboratory coat.
Respiratory Protection: If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level, an approved respirator must be used.
Hygiene Measures: Avoid contact with eyes, skin, and clothing. Wash hands thoroughly after using this product. Do not eat, drink, or smoke when handling this product.
Special Requirements for PPE, Clothing, Respirators, etc: N/A
Components with Workplace Control Parameters: N/A
SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

**Appearance:**
- **Form:** Liquid
- **Color:** Colorless
- **Odor:** No data available
- **Odor threshold:** No data available
- **pH-value at 20 °C (68 °F):** 7.0-9.0
- **Melting point/Melting range:** No data available
- **Boiling point/Boiling range:** No data available
- **Flash point:** No data available
- **Flammability (solid, gaseous):** No data available
- **Decomposition temperature:** No data available
- **Ignition temperature:** No data available
- **Danger of explosion:** No data available
- **Explosion limits:** No data available
- **Vapor pressure at 20 °C (68 °F):** No data available
- **Density at 20 °C (68 °F):** No data available
- **Relative density:** No data available
- **Vapour density:** No data available
- **Evaporation rate:** No data available
- **Solubility in / Miscibility with Water:** No data available
- **Partition coefficient (n-octanol/water):** No data available
- **Viscosity:** No data available
- **Dynamic:** No data available
- **Kinematic:** No data available
- **Solvent content:** No data available
- **Organic Solvents:** No data available
- **Water:** No data available
- **Solids content:** No data available
- **Other information:** No data available

SECTION 10 — STABILITY AND REACTIVITY

**Reactivity:** No dangerous reactions known under conditions of normal use.
**Chemical stability:** Stable under recommended storage conditions.
**Possibility of hazardous reactions:** No data available.
**Conditions to avoid:** No data available.
**Incompatible materials:** No data available
**Hazardous decomposition products:** No data available
SECTION 11 — TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure:
- Inhalation: No data available.
- Ingestion: No data available.
- Skin: No data available.
- Eyes: No data available.

Information on toxicological effects:
- Acute toxicity:
  - Oral LD50: No data available
  - Inhalation LD50: No data available
  - Dermal LD50: No data available
  - Other: Peritoneal LD50: No data available
- Skin corrosion/irritation: No data available
- Serious eye damage/irritation: No data available
- Respiratory or skin sensitization: No data available
- Germ cell mutagenicity: No data available

Carcinogenicity:
- IARC: No ingredient 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 ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by ACGIH.
- OSHA: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by OSHA.
- NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by NTP.

Reproductive Toxicity: No data available
- Teratogenicity: No data available
- Specific Target Organ Toxicity – Single Exposure: No data available
- Specific Target Organ Toxicity – Repeated Exposures: No data available
- Aspiration Hazard: No data available
- Signs and symptoms of exposure: No data available
- Synergistic effects: No data available
- Additional information: No data available

SECTION 12 — ECOLOGICAL INFORMATION

Toxicity: No data available
- Persistence and degradability: No data available
- Bioaccumulative potential: No data available
- Mobility in soil: No data available
- Results of PBT and vPvB assessment:
  - PBT: No data available
  - vPvB: No data available
- Other adverse effects: No data available

SECTION 13 — DISPOSAL CONSIDERATIONS

Product: Disposal should be in accordance with applicable regional, national and local laws and regulations. S29 – Do not empty into drains. S57 – Use appropriate container to avoid environmental contamination. Refer to Section 7: Handling and Storage and Section 8: Exposure Control/Personal Protection for additional handling information and protection of employees.
- Contamination packaging: Disposal must be made according to official regulations. To minimize exposure, please refer to Section 8: Exposure Control/Personal Protection of this SDS.
Product Title: EB-PMK Solution 1

SECTION 14 — TRANSPORT INFORMATION

DOT: Not considered dangerous goods
IMDG: Not considered dangerous goods
IATA: Not considered dangerous goods

SECTION 15 — REGULATORY INFORMATION

US Federal Regulations
OSHA Hazards: No data available.
Aggravated Medical Conditions: No data available.
Symptoms of Overexposure:
Inhalation: No data available.
Skin: No data available.
Eyes: No data available.
Ingestion: No data available.
SARA 302 Components: None present or none present in regulated quantities.
SARA 313 Components: None present or none present in regulated quantities.
SARA 311/312 Hazards: No data available.

US State Regulation:
California Prop. 65: No ingredients regulated by CA Prop 65 present.
New Jersey & Community RTK: Component (Water); CAS No (7732-18-5)
Massachusetts RTK: No ingredients regulated by MS Right to Know Act present.
Pennsylvania RTK: Component (Water); CAS No (7732-18-5)
Rhode Island RTK: No ingredients regulated by RI Right to Know Act present

SECTION 16 — OTHER INFORMATION

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.
Department issuing MSDS
Empirical Bioscience
2007 Eastcastle Dr SE
Grand Rapids, MI 49508 U.S.A.
1-877.479.9949

Abbreviations and acronyms:
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50
* Data compared to the previous version altered.
Product Title: EB-PMK Solution 2

SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Title: EB-PMK Solution 2
Item number: PMK-S2-Preps-PC
Document Number: PC-MSDS-043 Version 001

Relevant identified uses of the substance or mixture and uses advised against: For research use only.

Application of the substance / the mixture
Details of the supplier of the safety data sheet
Manufacturer/Supplier:
Empirical Bioscience
2007 EastCastle Dr SE
Grand Rapids, MI 49508 U.S.A.
1-877.479.9949
MSDS author; customer.service@empiricalbioscience.com

SECTION 2 — COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Hazardous Ingredients (specific)</th>
<th>%</th>
<th>CAS Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium Hydroxide</td>
<td>≥1-5%</td>
<td>1310-73-2</td>
</tr>
</tbody>
</table>

SECTION 3 — HAZARDS IDENTIFICATION

Labeling according to Regulation (EC) No 1272/2008: Void

Hazard pictograms: 
Signal Word: N/A
Hazard statements: H290 May be corrosive to metals.
H315 Skin irritant.
H319 Eye irritant.

Precautionary Statements:
P234 Keep only in original container.
P264 Wash skin thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P302 + P352 IF ON SKIN Wash with plenty of soap and water.
P305 + P351 + P338 IF IN EYES Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P332 + P313 IF skin irritation occurs, get medical advice/attention.
P337 + P313 IF skin irritation persists, get medical advice/attention.
P362 Absorb spillage to prevent material damage.
P390 Take off contaminated clothing and wash before reuse.

Hazard Classification:
OSHA Hazards: Corrosive to metals Category 1
Health Hazards: Skin Irritation Category 2
Eye Irritation Category 2A

Potential Health Effects:
Aggravated Medical Conditions: No data available.
Symptoms of Overexposure:
Inhalation: May be harmful if inhaled.
Skin: Causes skin irritation.
Eyes: Causes eye irritation.
Ingestion: May be harmful if swallowed.

Carcinogenicity:
IARC: No ingredient 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 ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by ACGIH.
OSHA: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by OSHA.
NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by NTP.
MATERIAL SAFETY DATA SHEET

SECTION 4 — FIRST AID MEASURES

Description of first aid measures
General information: Exit to a safe area. Consult a physician. Seek medical attention.
After inhalation: Remove to fresh air. If not breathing, give artificial respiration. Seek medical attention.
After skin contact: Exit to safe area. Remove contaminated clothing. Wash thoroughly with soap and water. Seek medical attention.
After eye contact: Flush eyes with clean water for a minimum of 15 minutes keeping eyes open. Seek medical attention. Continue rinsing eyes during transport to hospital.
After swallowing: Do NOT induce vomiting. Rinse mouth with water. Never give anything by mouth to an unconscious person. Seek medical attention.
Most important symptoms and effects, both acute and delayed: Irritation of skin and eyes.
Indication of any immediate medical attention and special treatment needed: Treat symptomatically. Symptoms may be delayed.

SECTION 5 — FIRE FIGHTING MEASURES

Conditions of Flammability: Not flammable or combustible.
Suitable Extinguishing Agents: CO2, extinguishing powder, water spray, or alcohol resistant foam.
Hazardous Combustion Products: Sodium oxides.
Protective Equipment for Firefighters: Wear NIOSH-approved self-contained breathing apparatus, if necessary.
Further Information: Prevent firefighting water from entering surface water or groundwater.

SECTION 6 — ACCIDENTAL RELEASE MEASURES

Personal Precautions: Wear respiratory protection. Avoid breathing vapors, mist, or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Keep away from heat and sources of ignition. See Section 8: Exposure Controls/Personal Protection for more details.
Environmental Precautions: Prevent further leakage if area is safe. Do not let product enter drains. Avoid discharge into the environment.
Emergency Procedures: Evacuate personnel to safe areas and follow emergency response protocols.
Methods and material for containment and cleaning up: Use inert absorbent material to soak up spill. Dispose of hazardous waste.

SECTION 7 — HANDLING AND STORAGE

Precautions for Safe Handling: Handle in accordance with good chemical hygiene and safety practices. Avoid contact with skin and eyes. Avoid inhalation of vapors or mist.
Conditions for safe storage: Keep containers tightly closed in a dry, cool, and well-ventilated place. Containers that have been opened must be carefully resealed and kept upright to prevent leakage.
Incompatible Products: No data available.

SECTION 8 — EXPOSURE CONTROL / PERSONAL PROTECTION

Appropriate Engineering Controls: Adequate ventilation and access to eye washing stations are required.
Personal protective equipment:
Hand Protection: Use gloves when handling this product. Inspect gloves prior to use for any visible damage. Use proper glove removal technique to prevent contact with skin. Dispose of gloves in accordance with applicable laws. Wash and dry hands after use.
Eye Protection: Wear a face shield and/or safety goggles when handling this product. Use NIOSH-approved eyewear.
Skin and Body Protection: Wear appropriate laboratory attire when handling this product, such as gloves, long pants, closed-toe shoes, and a laboratory coat.
Respiratory Protection: If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level, an approved respirator must be used.
Hygiene Measures: Avoid contact with eyes, skin, and clothing. Wash hands thoroughly after using this product. Do not eat, drink, or smoke when handling this product.
Special Requirements for PPE, Clothing, Respirators, etc: N/A
Components with Workplace Control Parameters:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No.</th>
<th>Value</th>
<th>Control Parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium Hydroxide</td>
<td>1310-73-2</td>
<td>TWA</td>
<td>2 mg/m³</td>
<td>USA. OSHA Table Z-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C</td>
<td>2 mg/m³</td>
<td>USA. ACGIH Threshold Limit</td>
</tr>
</tbody>
</table>

Remarks: Eye, skin, and upper respiratory tract irritation.

USA. NIOSH Recommended Limit.

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SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

**Appearance:**
- **Form:** Liquid
- **Color:** Colorless

**Odor:** No data available
**Odor threshold:** No data available
**pH-value at 20 °C (68 °F):** 12.0-14.0
**Melting point/Melting range:** No data available
**Boiling point/Boiling range:** No data available
**Flash point:** No data available
**Flammability (solid, gaseous):** No data available
**Ignition temperature:** No data available
**Decomposition temperature:** No data available
**Auto igniting:** No data available
**Danger of explosion:** No data available

**Explosion limits:**
- **Lower:** No data available
- **Upper:** No data available

**Vapor pressure at 20 °C (68 °F):** No data available
**Density at 20 °C (68 °F):** No data available
**Relative density:** No data available
**Vapour density:** No data available
**Evaporation rate:** No data available
**Solubility in / Miscibility with Water:** No data available
**Partition coefficient (n-octanol/water):** No data available
**Viscosity:** No data available
**Dynamic:** No data available
**Kinematic:** No data available
**Solvent content:** No data available
**Organic Solvents:** No data available
**Water:** No data available
**Solids content:** No data available
**Other information:** No data available

SECTION 10 — STABILITY AND REACTIVITY

**Reactivity:** No data available.
**Chemical stability:** Stable under recommended storage conditions.
**Possibility of hazardous reactions:** Not Applicable.
**Conditions to avoid:** Not Applicable.
**Incompatible materials:** Strong oxidizing agents, strong acids, organic materials.
**Hazardous decomposition products:** Sodium oxides,
SECTION 11 — TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure:
- Inhalation: May be harmful if inhaled.
- Ingestion: May be harmful if swallowed.
- Skin: Cause skin irritation.
- Eyes: Cause eye irritation.

Information on toxicological effects:

**Acute toxicity**
- Sodium Hydroxide
- Oral LD50: No data available
- Inhalation LD50: No data available
- Dermal LD50: 67,000 mg/kg (Rabbit)

**Skin corrosion/irritation:** No data available

**Serious eye damage/irritation:** No data available

**Respiratory or skin sensitization:** No data available

**Germ cell mutagenicity:** No data available

**Carcinogenicity**
- IARC: No ingredient 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 ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by ACGIH.
- OSHA: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by OSHA.
- NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by NTP.

**Reproductive Toxicity:** No data available.

**Teratogenicity:** No data available.

**Specific Target Organ Toxicity – Single Exposure:** No data available.

**Specific Target Organ Toxicity – Repeated Exposures:** No data available.

**Aspiration Hazard:** No data available.

**Signs and symptoms of exposure:** Irritating to eyes, skin, and respiratory system.

**Synergistic effects:** None known.

**Additional information:** None known.

SECTION 12 — ECOLOGICAL INFORMATION

**Toxicity:** No data available

**Persistence and degradability:** No data available

**Bioaccumulative potential:** No data available

**Mobility in soil:** No data available

**Results of PBT and vPvB assessment:**
- PBT: No data available
- vPvB: No data available

**Other adverse effects:** No data available.

SECTION 13 — DISPOSAL CONSIDERATIONS

**Product:** Disposal should be in accordance with applicable regional, national and local laws and regulations. S29 – Do not empty into drains. S57 – Use appropriate container to avoid environmental contamination. Refer to Section 7: Handling and Storage and Section 8: Exposure Control/Personal Protection for additional handling information and protection of employees.

**Contamination packaging:** Disposal must be made according to official regulations. To minimize exposure, please refer to Section 8: Exposure Control/Personal Protection of this SDS.
SECTION 14 — TRANSPORT INFORMATION

DOT: Proper shipping Name: Sodium hydroxide solution.
UN Number: 1824
Class: 8 – Corrosive Material (49CFR173.136)
Packaging Group: III – Minor danger

IMDG: Proper shipping Name: Sodium hydroxide solution.
UN Number: 1824
Class: 8
Packaging Group: III
EMS-No.: F-A, S-B

IATA: Proper shipping Name: Sodium hydroxide solution.
UN Number: 1824
Class: 8
Packaging Group: III

SECTION 15 — REGULATORY INFORMATION

US Federal Regulations
OSHA Hazards: Corrosive to metals.
Aggravated Medical Conditions:
Symptoms of Overexposure:
Inhalation: May be harmful if inhaled.
Skin: Causes skin irritation.
Eyes: Causes eye irritation.
Ingestion: May be harmful if swallowed
SARA 302 Components: None present or none present in regulated quantities.
SARA 313 Components: None present or none present in regulated quantities.
SARA 311/312 Hazards: Acute health hazard.

US State Regulation:
California Prop. 65: No ingredients regulated by CA Prop 65 present.
New Jersey & Community RTK:
Massachusetts RTK:
Pennsylvania RTK:
Rhode Island RTK:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium Hydroxide</td>
<td>1310-73-2</td>
</tr>
<tr>
<td>Water</td>
<td></td>
</tr>
<tr>
<td>Sodium Hydroxide</td>
<td>1310-73-2</td>
</tr>
<tr>
<td>Water</td>
<td></td>
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<tr>
<td>Sodium Hydroxide</td>
<td>1310-73-2</td>
</tr>
<tr>
<td>Water</td>
<td></td>
</tr>
</tbody>
</table>

SECTION 16 — OTHER INFORMATION

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Department issuing MSDS
Empirical Bioscience
2007 Eastcastle Dr SE
Grand Rapids, MI 49508 U.S.A.
1-877.479.9949

Abbreviations and acronyms:
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50
* Data compared to the previous version altered.
SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Title: EB-PMK Solution 3
Item number: PMK-S3-Preps-PC
Document Number: PC-MSDS-044 Version 001

Relevant identified uses of the substance or mixture and uses advised against: For research use only.

APPLICATION OF THE SUBSTANCE / THE MIXTURE

Details of the supplier of the safety data sheet
Manufacturer/Supplier:
Empirical Bioscience
2007 EastCastle Dr SE
Grand Rapids, MI 49508 U.S.A.
1-877.479.9949
MSDS author; customer.service@empiricalbioscience.com

SECTION 2 — COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Hazardous Ingredients (specific)</th>
<th>%</th>
<th>CAS Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic Acid</td>
<td>5-10%</td>
<td>64-19-7</td>
</tr>
<tr>
<td>Guanidine Hydrochloride</td>
<td>25-50%</td>
<td>50-10-1</td>
</tr>
</tbody>
</table>

SECTION 3 — HAZARDS IDENTIFICATION

Labeling according to Regulation (EC) No 1272/2008:

Hazard pictograms:
Signal Word: Danger
Hazard statements: H302 Harmful if swallowed.
H314 Causes severe eye burns and eye damage.
H318 Causes serious eye damage.
H319 Causes serious skin irritation.
H332 Harmful if inhaled.

Precautionary Statements:
P261 Avoid breathing dust/fumes/gas/mist/vapors/spray.
P264 Wash skin thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P311 Call a POISON CONTROL CENTER or doctor/physician.
P301 + P330 + P311 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 IF ON SKIN (or hair): Remove/take off all contaminated clothing. Rinse skin with water/shower.

OSHA Hazards: Corrosive
Health Hazards: Skin Corrosion Category 1A
Serious Eye Damage Category 1
Acute Toxicity, Oral Category 4
Specific Target Organ Toxicity – Single Exposure Category 3

Potential Health Effects:
Aggravated Medical Conditions: No data available.
Symptoms of Overexposure: Redness, pain, skin burns. Watering and irritation to eyes. Repeated exposures may cause erosion of exposed front teeth, darkening of the skin, and chronic inflammation of the nose, throat, and bronchial tubes.
Inhalation: Harmful if inhaled. Inhalation may cause lung and tooth damage.
Skin: Causes severe skin burns.
Eyes: Causes severe eye damage.
Ingestion: Harmful if swallowed.

Carcinogenicity:
IARC: No ingredient 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 ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by ACGIH.
OSHA: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by OSHA.
NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by NTP.
SECTION 4 — FIRST AID MEASURES

Description of first aid measures
General information: Exit to a safe area. Consult a physician. Seek medical attention.
After inhalation: Remove to fresh air. If not breathing, give artificial respiration. Seek medical attention.
After skin contact: Exit to safe area. Remove contaminated clothing. Wash thoroughly with soap and water. Seek medical attention.
After eye contact: Flush eyes with clean water for a minimum of 15 minutes keeping eyes open. Seek medical attention. Continue rinsing eyes during transport to hospital.
After swallowing: Do NOT induce vomiting. Give large quantity of water. Never give anything by mouth to an unconscious person. Seek medical attention.
Most important symptoms and effects, both acute and delayed: Irritation of skin, respiratory system, and eyes. Narcotic effect.
Indication of any immediate medical attention and special treatment needed: Treat symptomatically. Symptoms may be delayed.

SECTION 5 — FIRE FIGHTING MEASURES

Conditions of Flammability: Not flammable or combustible.
Suitable Extinguishing Agents: CO2, extinguishing powder, water spray, or alcohol resistant foam.
Hazardous Combustion Products: Carbon oxides (CO, CO2), nitrogen oxides (NOx), hydrogen chloride gas.
Protective Equipment for Firefighters: Wear NIOSH-approved self-contained breathing apparatus, if necessary.
Further Information: Prevent firefighting water from entering surface water or groundwater.

SECTION 6 — ACCIDENTAL RELEASE MEASURES

Personal Precautions: Wear respiratory protection. Avoid breathing vapors, mist, or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Keep away from heat and sources of ignition. See Section 8: Exposure Controls/Personal Protection for more details.
Environmental Precautions: Prevent further leakage if area is safe. Do not let product enter drains. Avoid discharge into the environment.
Emergency Procedures: Evacuate personnel to safe areas and follow emergency response protocols.
Methods and material for containment and cleaning up: Use inert absorbent material to soak up spill. Dispose of hazardous waste. Do not flush with water.

SECTION 7 — HANDLING AND STORAGE

Precautions for Safe Handling: Handle in accordance with good chemical hygiene and safety practices. Protect from moisture. Avoid contact with skin, eyes, and clothing. Avoid inhalation of vapors or mist.
Conditions for safe storage: Keep containers tightly closed in a dry, cool, and well-ventilated place. Containers that have been opened must be carefully resealed and kept upright to prevent leakage.
Incompatible Products: Strong oxidizing agents.
SECTION 8 — EXPOSURE CONTROL / PERSONAL PROTECTION

Appropriate Engineering Controls: Adequate ventilation and access to eye washing stations are required.

Personal protective equipment:

   Hand Protection: Use gloves when handling this product. Inspect gloves prior to use for any visible damage. Use proper glove removal technique to prevent contact with skin. Dispose of gloves in accordance with applicable laws. Wash and dry hands after use.

   Eye Protection: Wear a face shield and/or safety goggles when handling this product. Use NIOSH-approved eyewear.

   Skin and Body Protection: Wear appropriate laboratory attire when handling this product, such as gloves, long pants, closed-toe shoes, and a laboratory coat.

   Respiratory Protection: If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level, an approved respirator must be used.

   Hygiene Measures: Avoid contact with eyes, skin, and clothing. Wash hands thoroughly after using this product. Do not eat, drink, or smoke when handling this product.

Special Requirements for PPE, Clothing, Respirators, etc: N/A

Components with Workplace Control Parameters:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No.</th>
<th>Value</th>
<th>Control Parameters</th>
<th>Basis</th>
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</thead>
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<tr>
<td>Acetic Acid</td>
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<td>TWA 10 ppm</td>
<td>USA. ACGIH Threshold Limit</td>
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<td></td>
<td>STEL 15 ppm</td>
<td>USA. ACGIH Threshold Limit</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA 10 ppm or 25 mg/m³</td>
<td>USA. OSHA Table Z-1</td>
<td></td>
</tr>
<tr>
<td>Remarks:</td>
<td></td>
<td>The value in mg/m³ is approximate.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acetic Acid</td>
<td></td>
<td>TWA 10 ppm or 25 mg/m³</td>
<td>USA. NIOSH Recommended</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ST 10 ppm or 25 mg/m³</td>
<td>USA. NIOSH Recommended</td>
<td></td>
</tr>
</tbody>
</table>

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

Appearance:

   Form: Liquid
   Color: Colorless
   Odor: No data available
   Odor threshold: No data available
   pH-value at 20 °C (68 °F): 3.0-5.0
   Melting point/Melting range: No data available
   Boiling point/Boiling range: No data available
   Flash point: No data available
   Flammability (solid, gaseous): No data available
   Ignition temperature: No data available
   Decomposition temperature: No data available
   Auto igniting: No data available
   Danger of explosion: No data available
   Explosion limits:
   Lower: No data available
   Upper: No data available
   Vapor pressure at 20 °C (68 °F): No data available
   Density at 20 °C (68 °F): No data available
   Relative density: No data available
   Vapour density: No data available
   Evaporation rate: No data available
   Solubility in / Miscibility with Water: No data available
   Partition coefficient (n-octanol/water): No data available
   Viscosity: No data available
   Dynamic: No data available
   Kinematic: No data available
   Solvent content: No data available
   Organic Solvents: No data available
   Water: No data available
   Solids content: No data available
   Other information: No data available
SECTION 10 — STABILITY AND REACTIVITY

Reactivity: No dangerous reaction known under conditions of normal use.
Chemical stability: Stable under recommended storage conditions.
Possibility of hazardous reactions: Not Applicable.
Conditions to avoid: Contact with incompatible materials, excess heat.
Incompatible materials: Oxidizing agents, metals, amines, alcohols, peroxides, permanganates, soluble carbonates and phosphates, hydroxides, chlorinated compounds.
Hazardous decomposition products: Carbon oxides, nitrogen oxides (NOx), hydrogen chloride gas.

SECTION 11 — TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure:
- Inhalation: Harmful if inhaled. Inhalation may cause lung and tooth damage.
- Ingestion: Harmful if swallowed.
- Skin: Causes severe skin burns.
- Eyes: Causes severe eye damage.

Information on toxicological effects:

<table>
<thead>
<tr>
<th>Acute toxicity</th>
<th>Acetic Acid</th>
<th>GNC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral LD50</td>
<td>3,310 mg/kg (Rat)</td>
<td>1,900 mg/kg (Rat)</td>
</tr>
<tr>
<td>Inhalation LD50</td>
<td>No data available</td>
<td>No data available</td>
</tr>
<tr>
<td>Dermal LD50</td>
<td>1.06 L/kg (Rabbit)</td>
<td>2,000 mg/kg (Rabbit)</td>
</tr>
</tbody>
</table>

Skin corrosion/irritation: Causes severe skin burns.
Serious eye damage/irritation: Causes serious eye damage.
Respiratory or skin sensitization: Components of this product may be absorbed into the body through the skin. Irritating to skin and mucus membranes.

Germ cell mutagenicity: No mutagenic components identified.

Carcinogenicity
- IARC: No ingredient 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 ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by ACGIH.
- OSHA: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by OSHA.
- NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by NTP.

Reproductive Toxicity: No data available.
Teratogenicity: No data available.
Specific Target Organ Toxicity – Single Exposure: Respiratory tract irritation.
Specific Target Organ Toxicity – Repeated Exposures: No data available.
Aspiration Hazard: No data available.
Signs and symptoms of exposure: Redness, pain, skin burns. Watering and irritation to eyes. Repeated exposures may cause erosion of exposed front teeth, darkening of the skin, and chronic inflammation of the nose, throat, and bronchial tubes.
Synergistic effects: No data available.
Additional information: None known.

SECTION 12 — ECOLOGICAL INFORMATION

Toxicity: No data available.
Persistence and degradability: No data available.
Bioaccumulative potential: No data available.
Mobility in soil: Product is water soluble and may spread in water systems.
Results of PBT and vPvB assessment:
- PBT: No data available
- vPvB: No data available

Other adverse effects: The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.
SECTION 13 — DISPOSAL CONSIDERATIONS

**Product:** Disposal should be in accordance with applicable regional, national and local laws and regulations. S29 – Do not empty into drains. S57 – Use appropriate container to avoid environmental contamination. Refer to Section 7: Handling and Storage and Section 8: Exposure Control/Personal Protection for additional handling information and protection of employees.

**Contamination packaging:** Disposal must be made according to official regulations. To minimize exposure, please refer to Section 8: Exposure Control/Personal Protection of this SDS.

SECTION 14 — TRANSPORT INFORMATION

**DOT:** Not considered dangerous goods  
**IMDG:** Not considered dangerous goods  
**IATA:** Not considered dangerous goods

SECTION 15 — REGULATORY INFORMATION

**US Federal Regulations**  
**OSHA Hazards:** Corrosive  
**Aggravated Medical Conditions:** May cause nervous system disturbances.  
**Symptoms of Overexposure:**  
- **Inhalation:** Harmful if inhaled. Inhalation may cause lung and tooth damage.  
- **Skin:** Causes severe skin burns.  
- **Eyes:** Causes severe eye damage.  
- **Ingestion:** Harmful if swallowed

**SARA 302 Components:** None present or none present in regulated quantities.  
**SARA 313 Components:** None present or none present in regulated quantities.  
**SARA 311/312 Hazards:** Acute health hazard.

**US State Regulation:**  
- **California Prop. 65:** No ingredients regulated by CA Prop 65 present.  
- **New Jersey & Community RTK:** Acetic Acid 64-19-7  
- **Massachusetts RTK:** Acetic Acid 64-19-7  
- **Pennsylvania RTK:** Acetic Acid 64-19-7  
- **Rhode Island RTK:** Acetic Acid 64-19-7

SECTION 16 — OTHER INFORMATION

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Department issuing MSDS  
Empirical Bioscience  
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1-877.479.9949

**Abbreviations and acronyms:**  
- **ADR:** Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)  
- **IMDG:** International Maritime Code for Dangerous Goods  
- **DOT:** US Department of Transportation  
- **IATA:** International Air Transport Association  
- **CAS:** Chemical Abstracts Service (division of the American Chemical Society)  
- **NFPA:** National Fire Protection Association (USA)  
- **HMIS:** Hazardous Materials Identification System (USA)  
- **LC50:** Lethal concentration, 50 percent  
- **LD50:** Lethal dose, 50

* Data compared to the previous version altered.