MATERIAL SAFETY DATA SHEET

SECTION 1 - CHEMICAL PRODUCT(S) AND COMPANY IDENTIFICATION

Manufacturer Name: Biaffin GmbH & Co KG
Address: Heinrich-Plett-Strasse 40
D-34132 Kassel
Germany
For Information Call: +49 (0) 561 804 4668

Quick Identifier (In-plant Common Name): PKE-PMA-005
Chemical Name: Phorbol 12-myristate 13-acetate (PMA)/ 12-O-Tetradecanoylphorbol 13-acetate (TPA)
Common Name/Trade Name: PMA /TPA
CAS Number: 16561-29-8

SECTION 2 - COMPOSITION AND INFORMATION ON INGREDIENTS

Ingredient Name: Phorbol 12-myristate 13-acetate (PMA)
CAS Number(s): 16561-29-8
Principal Hazardous Component(s): May be an irritant; may cause irritation to eyes, skin, mucous membranes, HMIS Ratings: Health = 1 Flammability = 0 Reactivity = 0
Biologic Activity: N/A
Exposure Limit(s): N/A

SECTION 3 - HAZARDS IDENTIFICATION

Threshold Limit Value: Substance not yet fully tested.
Signs and Symptoms of Exposure: N/A
Medical Conditions Generally Aggravated by Exposure: N/A
Chemicals Listed as Carcinogen or Potential Carcinogen: No
National Toxicology Program: No
I.A.R.C. Monographs: No
OSHA: No
OSHA Permissible Exposure Limit: No
ACGIH Threshold Limit Value: N/A
Other Exposure Limit Use: N/A

SECTION 4 - FIRST AID MEASURES

Emergency and First Aid Procedures: Potentially harmful. Avoid prolonged or repeated exposure.
1. Inhalation: If inhaled, remove to fresh air; if breathing is difficult, give oxygen; if breathing stops, give artificial respiration
2. Eyes: Flush with copious amounts of water; assure adequate flushing by separating the eyelids with fingers; call a physician
3. Skin: Flush with copious amounts of water; remove contaminated clothing and shoes; call a physician
4. Ingestion: If swallowed, wash out mouth with copious amounts of water; call a physician

SECTION 5 - FIRE AND EXPLOSION HAZARDS

Special Fire Fighting Procedures: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes
Auto-ignition Temperature: N/A
Flash Point: N/A
Flammable Limits in Air (% by Volume): N/A
Extinguisher Media: Water spray, carbon dioxide, dry chemical powder or foam
Unusual Fire and Explosion Hazards: May emit toxic fumes under fire conditions
Stability: N/A

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Precautions to be Taken in Handling and Storage: Use appropriate protective equipment and methods to clean up spilled substances promptly
Other Precautions: None
Steps to be Taken in Case Material in Release or Spilled: Cordon off area of spill; wear self-contained breathing apparatus, protective clothing and heavy rubber gloves.
Waste Disposal Methods: Absorb solutions with finely-powdered liquid-binding material (diatomite, universal binders); decontaminate surfaces and equipment by scrubbing with alcohol; dispose of contaminated material according to Section 13.

SECTION 7 - HANDLING & STORAGE

Storage: store solid and solutions at -20 ºC.
Handling: Avoid contact with skin, eyes and clothing; material may be an irritant

SECTION 8 - EXPOSURE CONTROLS & PERSONAL PROTECTION

Respiratory Protection (Specify Type): NIOSH/MSHA-approved respirator
Mechanical (General): Vent Fan
Ventilation: Advisable
Local Exhaust: As required
Special: None
Protective Gloves: Wear chemical-resistant rubber gloves.
Eye Protection: Chemical safety goggles should be worn.
Other Protective Clothing or Equipment: Sensitive individuals should wear dust masks/respirators, protective gloves, eye protection, lab coat, apron or other protective clothing to minimize contact. Follow safe laboratory practices.

SECTION 9 - PHYSICAL & CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance and Odor</td>
<td>Solid – odor not determined</td>
</tr>
<tr>
<td>Solubility in Water</td>
<td>Moderate</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>N/A</td>
</tr>
<tr>
<td>Melting Point</td>
<td>N/A</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>N/A</td>
</tr>
<tr>
<td>pH</td>
<td>N/A</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>N/A</td>
</tr>
<tr>
<td>Flash Point</td>
<td>N/A</td>
</tr>
</tbody>
</table>

SECTION 10 - STABILITY & REACTIVITY

Stability: Avoid acids and bases
Thermal Decomposition: Protect from light and heat
Dangerous Reactions: No dangerous reactions identified.
Dangerous Products of Decomposition: Thermal decomposition may produce toxic gases such as carbon monoxide and carbon dioxide

SECTION 11 - TOXICOLOGICAL INFORMATION

Refer to Section 3 for health effects information. The toxicological properties of this material have not been fully investigated. Always follow Good Laboratory and Industrial Hygiene Practices and wear proper personal protective equipment when handling chemicals. We recommend treating all chemicals with caution.
Routes of Exposure: Inhalation, ingestion, skin and eye contact.
LD50: No oral LD50 is available
Carcinogenicity: Not listed by NTP, IARC or OSHA.
Mutagenic/Teratogenic Effects: Unknown
SECTION 12 - ECOLOGICAL INFORMATION
Do not allow product to reach ground water, water course, or sewage system.

SECTION 13 - DISPOSAL CONSIDERATIONS
Dispose of waste in accordance with all applicable Federal, State and local regulations. Chemical residues are generally classified as special waste and, as such, the transportation, storage, treatment and disposal of this waste material must be conducted in compliance with all applicable Federal, State and local regulations. Rinse empty containers thoroughly before disposal and/or recycling.

SECTION 14 - TRANSPORT INFORMATION

<table>
<thead>
<tr>
<th>Department of Transportation Requirements:</th>
<th>Proper Shipping Name: Not regulated</th>
</tr>
</thead>
<tbody>
<tr>
<td>This substance is considered to be non-hazardous for transport</td>
<td>Hazard Class: N/A</td>
</tr>
<tr>
<td></td>
<td>Packaging Group: N/A</td>
</tr>
<tr>
<td></td>
<td>Reportable Quantity: N/A</td>
</tr>
<tr>
<td></td>
<td>Labels Required: N/A</td>
</tr>
<tr>
<td></td>
<td>UN/NA Code: N/A</td>
</tr>
</tbody>
</table>

International Transportation Regulations: Not regulated

SECTION 15 - REGULATORY INFORMATION

US Toxic Substances Control Act (TSCA): Not listed
US Other: Not applicable
EEC EINECS Number: Not identified
EEC Risk Statements: May be irritating to eyes, skin and respiratory system
Other Country Regulations: None identified

SECTION 16 - OTHER USEFUL INFORMATION
This material is sold for research purposes only and is not required to appear on the TSCA inventory. It is not intended for food, drug, household, agricultural or cosmetic use. Its use must be supervised by a technically qualified individual experienced in handling potentially hazardous chemicals. The above information is correct to the best of our knowledge. Users should make independent decisions regarding completeness of the information based on all sources available. The Biaffin GmbH & Co KG shall not be held liable for any damage resulting from handling or contact with the above product.

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