Material Safety Data Sheet

PRODUCT NAME: PHMB

CHEMICAL PRODUCT AND DISTRIBUTOR IDENTIFICATION

TRADE NAME: PHMB
DATE: March 28, 2013

DISTRIBUTOR: ACME-HARDESTY COMPANY
ADDRESS: 450 Sentry Parkway
Blue Bell, PA 19422

TELEPHONE: (866) 226-3834
FAX: (215) 591-3620
EMERGENCY: CHEMTREC (800) 424-9300

COMPOSITION / INFORMATION ON INGREDIENTS

DESCRIPTION: Preservative for cosmetics based on Polyaminopropyl Biguanide

<table>
<thead>
<tr>
<th>DANGEROUS SUBSTANCE</th>
<th>CAS-NR</th>
<th>CONTENT</th>
<th>SYMBOL / R-PHR.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyaminopropyl-biguanide (EC – Not applicable)</td>
<td>32289-58-0</td>
<td>20 %</td>
<td>Xi, N, R 41-50</td>
</tr>
<tr>
<td>Polymer</td>
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</table>

ADDITIONAL INFORMATION:
The CAS-No. 32289-58-0, 28757-47-3, 70170-61-5, 27083-27-8 and 91403-50-8 all refer to the same substance.
The CAS-No. 27083-27-8 and 91403-50-8 are notified under Directive 98/8/EC (BPD).

HAZARDS IDENTIFICATION

HAZARDS DESIGNATION: Xi: Irritant
N: Dangerous for the environment

PARTICULAR DANGERS FOR MAN/ENVIRONMENT: R41: Risk of serious damage to eyes
R50: Very toxic for aquatic organisms.

CLASSIFICATION SYSTEM: The health and environmental hazards of this preparation have been assessed by the conventional method described annex II and III of the preparations Directive 1999/45EC.
FIRST AID MEASURES

GENERAL INFORMATION:

INHALATION: Supply fresh air; consult doctor in case of symptoms.

SKIN CONTACT: Take off contaminated clothing immediately.
Wash immediately with plenty of water and soap and rinse thoroughly.

EYE CONTACT: Rinse thoroughly with plenty of water for at least 10 minutes while holding eyelids open.
If symptoms persist, consult a physician.

INGESTION: Rinse out mouth and then drink water.
Do not induce vomiting.
Call for medical help.
Administer activated charcoal (3 table spoons elutriated in glass of water).

ADVICE TO DOCTOR/TREATMENT: An allergic skin reaction may occur.

FIRE FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA: Water spray jet, extinguishing powder, carbon dioxide, foam

UNSUITABLE EXTINGUISHING MEDIA: None

SPECIAL EXPOSURE HAZARDS: In case of fire, toxic incineration products may be released:
Nitrogen oxides (NOx)
Carbon monoxide (CO)
Hydrogen Chloride (HCl)

PROTECTIVE EQUIPMENT: Wear self-contained breathing apparatus.

ACCIDENTAL RELEASE MEASURES

PERSONAL SAFETY PRECAUTIONS: Wear protective equipment.
Keep unprotected persons away.

ENVIRONMENTAL PROTECTION MEASURES: As the product is hazardous for aquatic environment, it must be prevented from reaching surface water.
Inform authorities in case of contamination of water or sewage system.

CLEANING/COLLECTING MEASURES: Collect large amounts in suitable container.
Cover the rest with absorbent, mix intensively and collect mechanically.
Suitable binder: multi-purpose absorbent.
Dispose of according to Disposal Considerations section.
HANDLING AND STORAGE

ADVICE ON SAFE HANDLING: Ensure good exhaust ventilation at the workplace. Avoid splashes or sprays.

FIRE AND EXPLOSION PROTECTION: No special measures required.

STORAGE ROOMS/VESSELS. REQUIREMENTS: Use polyolefin containers. Prevent any penetration into the ground.

STORAGE COMPATIBILITY INFORMATION: None.

ADDITIONAL STORAGE CONDITIONS INFO: Protect from frost. If the product solidifies at low temperatures, it can be restored by slowly warming the product. The effectiveness is not affected hereby.

EXPOSURE CONTROLS / PERSONAL PROTECTION

ADDITIONAL TECHNICAL SYSTEMS DESIGN INFO: No further data

COMPONENTS WITH CRITICAL VALUES THAT REQUIRE MONITORING AT THE WORKSPACE: The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

EXPOSURE LIMITS: No occupational exposure limit assigned.

<table>
<thead>
<tr>
<th>SUBSTANCE</th>
<th>CAS-NR.</th>
<th>VALUE</th>
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<tbody>
<tr>
<td>Polyhexanide (20%)</td>
<td>27083-27-8</td>
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</table>

RESPIRATORY PROTECTION: Not necessary if room is well ventilated.

HAND PROTECTION: Chemical protective gloves (only CE-registration cat. III) Check protective gloves prior to each use for their proper conditions. After use of gloves, apply skin-cleaning agents and skin cosmetics.

MATERIAL OF GLOVES: Nitrile rubber, NBR
UNACCEPTABLE MATERIAL: Leather gloves
PENETRATION TIME: Not known. It depends on different criteria and may be determined by the manufacturer according to the norm DIN EN 374-3.

EYE PROTECTION: Safety goggles

SKIN PROTECTION: Protective clothing

HYGIENE MEASURES: Avoid contact with eyes and skin. Wash hands during breaks and at the end of the shift. Use skin cream for skin protection

ADDITIONAL INFORMATION: Information valid at the time of review of safety data sheet.
PHYSICAL AND CHEMICAL PROPERTIES

FORM: Liquid
COLOR: Colorless to pale yellow
ODOR: Odorless
pH VALUE (1% Solution): 4.0 – 6.0
MELTING POINT, °C: Not determined
BOILING POINT, °C: 102 – 105°C
FLASH POINT: Not applicable
IGNITION TEMPERATURE, °C: Product is not self-igniting
FLAMMABILITY, °C:
   LOWER EXPLOSION LIMIT: Product is not explosive
   UPPER EXPLOSION LIMIT: Product is not explosive
VAPOR PRESSURE @ 20°C: 23 hPa
DENSITY @ 20°C: 1.030 – 1.060
SOLUBILITY/MISCIBILITY IN WATER: Fully miscible
PARTITION COEFFICIENT: n-octanol/water: Not available
SOLIDS CONTENT, %: 19 – 21

STABILITY AND REACTIVITY

CONDITIONS TO AVOID: Before handling the product, should neither be diluted nor mixed with other chemicals, in order to avoid negative influences on the active ingredient(s). Protect from temperature < 10°C. Protect from temperature > 70°C.
MATERIALS TO AVOID: Anionic compounds
DANGEROUS REACTIONS: No dangerous reactions known.
HAZARDOUS DECOMPOSITION: None, if storage and handling is done as recommended.

TOXICOLOGICAL INFORMATION

<table>
<thead>
<tr>
<th>DIMENSION</th>
<th>SPECIES</th>
<th>VALUE</th>
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<tbody>
<tr>
<td>ACUTE ORAL TOXICITY</td>
<td>LD50</td>
<td>Rat</td>
</tr>
<tr>
<td>ACUTE DERMAL TOXICITY</td>
<td>LD50</td>
<td>Rat</td>
</tr>
</tbody>
</table>

IRRITANT EFFECT ON SKIN: Slight irritant. After contact with skin for a certain period of time even small quantities of chemicals classified as irritant may affect skin. Always take first aid measures when skin contact has taken place.

SENSITIZATION: No sensitizing effect known

SUBACUTE TO CHRONIC TOXICITY: Non carcinogenic
Non teratogenic (EPA 83-3 a)
Not mutagenic (OECD 476)
ECOLOGICAL INFORMATION

ELIMINATION INFORMATION (PERSISTENCE AND DEGRADABILITY): The product can largely eliminated from waste water by adsorption to the activated sludge in purification plants.

BEHAVIOR IN ENVIRONMENT SYSTEMS: Low potential for bio-accumulate

ECOTOXICOLOGICAL EFFECTS:

AQUATIC TOXICITY:

<table>
<thead>
<tr>
<th>Endpoint</th>
<th>EC50</th>
<th>EC50 / 48h</th>
<th>EC50 / 72 h</th>
<th>LC50 / 96 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activated sludge organisms</td>
<td>161 mg/l</td>
<td>1-10 mg/l</td>
<td>&gt;0.1 mg/l</td>
<td>8 mg/l</td>
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<tr>
<td>Daphnia</td>
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<tr>
<td>Selenastrum capricornutum</td>
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<tr>
<td>Oncorhynchus mykiss</td>
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</tbody>
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REMARK: Depending on concentration, toxic effects on activated sludge organisms are possible.

AOX-INDICATION: The product does not contain substances, which can influence the AOX of waste water. Care should be paid to properly washing out the chloride when performing the AOX method.

HEAVY METALS/ COMPOUNDS CONTAINED PER EC GUIDELINE NO. 76/464 EC: Due to its formulation, the product does not contain heavy metals.

GENERAL NOTES: The product contains materials that are harmful to the environment. Avoid transfer into the environment.

DISPOSAL CONSIDERATIONS

DISPOSAL/PRODUCT: Product must be disposed of according to local regulations pertaining to the disposal of hazardous waste

EUROPEAN WASTE CATALOGUE: 16 00 00 wastes not otherwise specified in the list
16 03 00 off-specification batches and unused products
16 03 05 organic wastes containing dangerous substances

DISPOSAL/CONTAMINATED PKG: Dispose of packaging according to regulations on the disposal of packaging. Empty contaminated packaging thoroughly. They can be recycled after thorough and proper cleaning.

CLEANING AGENT: Water, if necessary with cleaning agent
TRANSPORT INFORMATION

LAND TRANSPORT ADR/RID (cross-border domestic):
Class/Division/Group: 9
ADR/RID/ADG (Australia) Class: 9 (M6) Miscellaneous dangerous substances and articles
KEMLER NO.: 90
UN No.: 3082
Label: 9
Packing Group III
Proper shipping name Environmentally hazardous substance, Liquid, N.O.S.
(Poly(hexamethylenebiguanide HYDROCHLORIDE))

MARINE TRANSPORT IMDG/GGV SEA:
Class: 9
UN-No.: 3082
Label: 9
Packing Group III
EMS Number: F-A, S-F
Marine Pollutant: No
Proper shipping name Environmentally hazardous substance, Liquid, N.O.S.
(Polyhexamethylenebiguanide)

AIR TRANSPORT/ICAO AND IATA-DGR
Class: 9
UN/ID No.: 3082
Label: 9
Packing Group III
Proper shipping name Environmentally hazardous substance, Liquid, N.O.S.
(Polyhexamethylenebiguanide)

REMARKS:
Packing Instructions / max.net weight
Passenger aircraft: 914 / not limited
Cargo aircraft: 914 / not limited
REGULATORY INFORMATION

DESIGNATION ACCORDING TO EC GUIDELINES: The product has been classified and labeled in accordance to EC Directives / Ordinance on Hazardous Materials (CHIP)

LABELING HAZARD SYMBOLS: Xi: Irritant 
N: Dangerous for the environment

RISK PHRASES: R41: Risk of serious damage to eyes.
R50: Very toxic to aquatic organisms.

SAFETY PHRASES: S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S37/39: Wear suitable gloves, and eye/face protection.
S60: This material and its container must be disposed of as hazardous waste.
S61: Avoid release to the environment. Refer to special instruction/safety data sheets.

DESIGNATION AND CONCENTRATION OF BIOCIDAL INGREDIENTS ACCORDING TO EC DIRECTIVE 98/8/EC: Polyaminopropyl-biguanide (INCI): 200.0 g/kg

CONTROL OF MAJOR ACCIDENT HAZARDS (COMAH): Critical quantity values according to the regulations on accidents should be adhered to.

WATER HAZARD CLASS: WGK2 (Self VwVwS Ann.4)

The data herein are based on our current knowledge and believed to be reliable. Acme-Hardesty Co., provides this information without any representation or warranty, expressed or implied, regarding its accuracy or correctness.

Users must make their own determination that handling, storage and use of the product in the anticipated manner is safe and appropriate. Because these actions of the user are out of our control, and may be beyond our knowledge, we do not assume responsibility and expressly disclaim liability for loss, damage, expense or any other claim arising out of or in any way connected with the handling, storage, use or disposal of the product.

Disposal of containers must comply with applicable federal, state and local laws and regulations. Empty containers should never be given to individuals.