Burdick & Jackson

Material Safety Data Sheet

Propylene Glycol Monomethyl Ether Acetate

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Propylene Glycol Monomethyl Ether Acetate

PRODUCT NUMBER: None

OTHER/GENERIC NAMES: PGMEA,
2-Methoxy-1-methylethyl acetate.

PRODUCT USE: Solvent

MANUFACTURER: Honeywell, Burdick & Jackson
1953 South Harvey Street
Muskegon, MI 49442

FOR MORE INFORMATION CALL: (Monday-Friday, 8:00am-5:00pm)
1-800-368-0050

IN CASE OF EMERGENCY CALL:
(24 Hours/Day, 7 Days/Week)
1-800-707-4555 (Honeywell)
For Transportation Emergencies:
1-800-424-9300 (CHEMTREC - Domestic)
703-527-3887 (CHEMTREC - International)

2. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>INGREDIENT NAME</th>
<th>CAS NUMBER</th>
<th>WEIGHT %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propylene Glycol Monomethyl Ether Acetate</td>
<td>108-65-6</td>
<td>100%</td>
</tr>
</tbody>
</table>

Trace impurities and additional material names not listed above may also appear in Section 15 towards the end of the MSDS. These materials may be listed for local "Right-To-Know" compliance and for other reasons.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Clear, flammable liquid with a slight ether odor. Can cause skin, eye and respiratory tract irritation.

POTENTIAL HEALTH HAZARDS

SKIN: Exposures to the skin result in itching, redness and dermatitis.

EYES: Liquid and vapor contact produces irritation.

INHALATION: Exposure can cause irritation to mucous membranes.

MSDS Number: PGMEA
Current Issue Date: August 30, 2001
Burdick & Jackson

MATERIAL SAFETY DATA SHEET
Propylene Glycol Monomethyl Ether

INGESTION: Symptoms may include irritation, nausea, abdominal pain and toxic effects.

DELAYED EFFECTS: None known.
Ingredients found on one of the OSHA designated carcinogen lists are listed below.

<table>
<thead>
<tr>
<th>INGREDIENT NAME</th>
<th>NTP STATUS</th>
<th>IARC STATUS</th>
<th>OSHA LIST</th>
</tr>
</thead>
<tbody>
<tr>
<td>No ingredients listed in this section.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

SKIN: Flush with water for at least 15 minutes. Remove contaminated clothing. Get medical assistance. Wash clothing before reuse.

EYES: Flush with water for at least 15 minutes. Get medical assistance immediately.

INHALATION: Remove to fresh air. If breathing is difficult, give oxygen if qualified personnel are available. Call a physician immediately.

INGESTION: If patient is conscious, rinse mouth with water. Do not induce vomiting unless instructed to do so by a physician. Get immediate medical attention.

ADVICE TO PHYSICIAN: No specific advice. Treat according to symptoms present.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT: 108°F (42°C)
FLASH POINT METHOD: Closed Cup
LOWER FLAME LIMIT (volume % in air): 1.5 (LEL)
UPPER FLAME LIMIT (volume % in air): 7.0 (UEL)
FLAME PROPAGATION RATE (solids): Not applicable
OSHA FLAMMABILITY CLASS: 1C

EXTINGUISHING MEDIA:
Dry chemical. carbon dioxide or alcohol resistant foam. Water spray may be used to reduce vapors and to cool containers exposed to fire.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
Fire hazard when exposed to heat, flame or oxidizers. Vapors are heavier than air and may travel a considerable distance to an ignition source and flash back. Vapor mixtures are explosive.

SPECIAL FIRE FIGHTING PRECAUTIONS/INSTRUCTIONS:
Wear self-contained breathing apparatus. Do not release runoff from fire control methods to sewers or waterways. Keep fire exposed containers cool and reduce vapors with water spray.
6. ACCIDENTAL RELEASE MEASURES

IN CASE OF SPILL OR OTHER RELEASE: (Always wear recommended personal protective equipment.)
Remove personnel from area and eliminate all sources of ignition. Wear protective clothing and use approved
respirator equipment. Contain and recover liquid when possible. Absorb with inert absorbent and place in an
approved chemical waste container. For large spills, dike up with inert material and transfer into same container.
Do not allow to enter into sewers or waterways.

Spills and releases may have to be reported to Federal and/or local authorities. See Section 15 regarding reporting
requirements.

7. HANDLING AND STORAGE

NORMAL HANDLING: (Always wear recommended personal protective equipment.)
Ground containers for transfer of contents. Keep away from sparks, open flames and sources of ignition. Use
with adequate ventilation. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke in the work area.
Wash thoroughly after handling.

STORAGE RECOMMENDATIONS:
Protect from physical damage. Store in a cool, dry, well-ventilated area away from ignition sources and other fire
hazards.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:
Provide general or local exhaust ventilation systems to maintain airborne concentrations below permissible TLV
levels. Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by
controlling it at its source.

PERSONAL PROTECTIVE EQUIPMENT

SKIN PROTECTION:
Protective gloves and clothing if there is repeated or prolonged exposure to liquid or mist. Otherwise, full work
clothing. Acceptable materials of construction include neoprene, rubber, nitrile and natural.

EYE PROTECTION:
Safety glasses with side-shields are considered minimum protection. Goggles or face shield may be necessary
depending on quantity of material and conditions of use.

RESPIRATORY PROTECTION:
Not required for properly ventilated areas. If there is potential for inhalation of vapor or mist, use an
appropriate NIOSH approved respirator. Warning! Air-purifying respirators do not protect workers in oxygen-
deficient atmospheres.
The respirator must be selected based on contamination levels and use conditions found in the workplace, must not exceed the working limits of the respirator and be approved by the National Institute for Occupational Safety and Health (NIOSH) and used in accordance with Occupational Safety and Health Administration (OSHA) 29 CFR 1910.134.

ADDITIONAL RECOMMENDATIONS:
None

EXPOSURE GUIDELINES

<table>
<thead>
<tr>
<th>INGREDIENT NAME</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>OTHER LIMIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propylene Glycol Monomethyl Ether Acetate</td>
<td>None</td>
<td>None</td>
<td>100 ppm 8-hr TWA **</td>
</tr>
</tbody>
</table>

* = Limit established by Honeywell
** = Workplace Environmental Exposure Level (AIHA).
*** = Biological Exposure Index (ACGIH).

OTHER EXPOSURE LIMITS FOR POTENTIAL DECOMPOSITION PRODUCTS:
None

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>APPEARANCE</td>
<td>Clear, colorless liquid</td>
</tr>
<tr>
<td>PHYSICAL STATE</td>
<td>Liquid</td>
</tr>
<tr>
<td>MOLECULAR WEIGHT</td>
<td>132.18</td>
</tr>
<tr>
<td>CHEMICAL FORMULA</td>
<td>C₆ H₁₂ O₃</td>
</tr>
<tr>
<td>ODOR</td>
<td>Slight ether odor</td>
</tr>
<tr>
<td>SPECIFIC GRAVITY (water = 1.0)</td>
<td>0.966 @ 68°F (20°C)</td>
</tr>
<tr>
<td>SOLUBILITY IN WATER (weight %)</td>
<td>Slight</td>
</tr>
<tr>
<td>pH</td>
<td>Neutral</td>
</tr>
<tr>
<td>BOILING POINT</td>
<td>146°C</td>
</tr>
<tr>
<td>FREEZING POINT</td>
<td>-65°C</td>
</tr>
<tr>
<td>VAPOR PRESSURE: @ 20°C</td>
<td>3.9 mm Hg</td>
</tr>
<tr>
<td>VAPOR DENSITY (air = 1.0)</td>
<td>4.6</td>
</tr>
<tr>
<td>% VOLATILES</td>
<td>100</td>
</tr>
<tr>
<td>FLASH POINT</td>
<td>108°F (42°C)</td>
</tr>
</tbody>
</table>

(Flash point method and additional flammability data are found in Section 5.)

10. STABILITY AND REACTIVITY

NORMALLY STABLE? (CONDITIONS TO AVOID):
Stable at room temperatures. Avoid contact with ignition sources. Vapors are flammable. Containers may rupture violently in fire and travel a considerable distance.
MATERIAL SAFETY DATA SHEET
Propylene Glycol Monomethyl Ether

INCOMPATIBILITIES:
Reacts with oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS:
Combustion products include carbon monoxide and carbon dioxide.

HAZARDOUS POLYMERIZATION:
Will not occur.

11. TOXICOLOGICAL INFORMATION
IMMEDIATE (ACUTE) EFFECTS:
Oral LD₉₀ (rat): 8532 mg/kg
Dermal LD₉₀ (rabbit): > 5 gm/kg.

DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS:
None known.

12. ECOLOGICAL INFORMATION
Data not available.

13. DISPOSAL CONSIDERATIONS

RCRA
Is the unused product a RCRA hazardous waste if discarded? Yes
If yes, the RCRA ID number is: D001 Ignitable

OTHER DISPOSAL CONSIDERATIONS:
Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Dispose of container and unused contents in accordance with federal, state and local requirements.

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

14. TRANSPORT INFORMATION

US DOT PROPER SHIPPING NAME: Flammable liquid, n.o.s. (propylene glycol monomethyl ether acetate)
US DOT HAZARD CLASS: 3, Flammable Liquid
US DOT ID NUMBER: UN1993
US DOT PACKING GROUP: III
NA EMERGENCY RESPONSE GUIDE: 128
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MATERIAL SAFETY DATA SHEET
Propylene Gylcol Monomethyl Ether

For additional information on shipping regulations affecting this material, contact the information number found in Section 1.

15. REGULATORY INFORMATION

TOXIC SUBSTANCES CONTROL ACT (TSCA)

TSCA INVENTORY STATUS: Listed on the inventory.

OTHER TSCA ISSUES: Not subject to export notification.

SARA TITLE III/CERCLA

"Reportable Quantities" (RQs) and/or "Threshold Planning Quantities" (TPQs) exist for the following ingredients.

<table>
<thead>
<tr>
<th>INGREDIENT NAME</th>
<th>SARA/CERCLA RQ (lb)</th>
<th>SARA EHS TPQ (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No ingredients listed in this section.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Spills or releases resulting in the loss of any ingredient at or above its RQ requires immediate notification to the National Response Center [(800) 424-8802] and to your Local Emergency Planning Committee.

SECTION 311 HAZARD CLASS: Immediate. Fire

SARA 313 TOXIC CHEMICALS:
The following ingredients are SARA 313 "Toxic Chemicals". CAS numbers and weight percents are found in Section 2.

<table>
<thead>
<tr>
<th>INGREDIENT NAME</th>
<th>COMMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>No ingredients listed in this section.</td>
<td></td>
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</tbody>
</table>

STATE RIGHT-TO-KNOW
In addition to the ingredients found in Section 2, the following are listed for state right-to-know purposes.

<table>
<thead>
<tr>
<th>INGREDIENT NAME</th>
<th>WEIGHT %</th>
<th>COMMENT</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

ADDITIONAL REGULATORY INFORMATION:
None

WHMIS CLASSIFICATION (CANADA):
Classification: B3, D2B.
This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by the Controlled Products Regulations.
Burdick & Jackson

MATERIAL SAFETY DATA SHEET
Propylene Glycol Monomethyl Ether

FOREIGN INVENTORY STATUS:
PGMEA is listed on the following inventories:
   Australian.
   Canadian DSL.
   Chinese.
   EINECS.
   Japanese (ENCS).
   Korean.
   Philippine.

16. OTHER INFORMATION

PREVIOUS ISSUE DATE: June, 2000

CHANGES TO MSDS FROM PREVIOUS ISSUE DATE ARE DUE TO THE FOLLOWING:
   Amended Hazards Identification, Section 3.
   Amended Advice to Physician, Section 4.
   Amended Accidental Release Measures, Section 6.
   Amended Normal Handling, Section 7.
   Amended Respiratory Protection, Section 8.
   Amended Toxicological Information, Section 11.
   Amended Ecological Information, Section 12.
   Amended Foreign Inventory Status, Section 15.

OTHER INFORMATION: NFPA Rating:
   Health: 0
   Flammability: 2
   Reactivity: 0