Suzanne Miller

'HANDLE with CARE!'

BREWER SCIENCE INC.
SAFETY DATA SHEET

This Material Safety Data Sheet has been prepared to comply with the EC Directive, Canadian WHMIS and the OSHA Hazard Communication Standard.

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

Product Name: EXP02104

Manufacturer: Brewer Science, Inc.
2401 Brewer Drive
Rolla, MO 65401

Information Phone Number: (573) 364-0300 **Fax:** (573) 368-3318
Emergency Phone Number: (800) 255-3924
MSDS Date of Preparation: 02/11/03
Product Use: Protective Coating

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS# / EINECS#	%	EU Classification (67/548/EEC)
2-(1-Methoxy)propyl acetate (Propylene glycol monomethyl ether acetate, PGMEA)	108-65-6 / 203-603-9	30-50	Xi R10, R36
bis(2-methoxyethyl)ether) (diethylene glycol dimethyl ether/diglyme)	111-96-6 / 203-924-4	30-50	T R10, R19, R60, R61
Polymer	Proprietary	10-30	Not Applicable

See Section 16 for further information on EU Classification.

SECTION 3: HAZARDS IDENTIFICATION

Liquid with a sweet odor.

EMERGENCY OVERVIEW: Flammable liquid and vapor. May cause eye, skin, and respiratory irritation. May cause headache, dizziness, nausea and other symptoms of central nervous system depression. May be harmful if absorbed through the skin. This product contains a chemical that may cause adverse reproductive and fetal effects based on studies with laboratory animals. May form explosive peroxides.

EU Preparation Classification (1999/45/EC): Flammable Toxic (T) R10, R19, R36, R60, R61

SECTION 4: FIRST AID MEASURES

Eye: Rinse thoroughly with water for at least 15 minutes, holding the eye lids open to be sure the material is washed out. Get immediate medical attention.

Skin: Remove contaminated clothing. Wash contact area thoroughly with soap and water. Get medical attention if irritation or symptoms of exposure develop. Launder clothing before re-use.

Inhalation: Remove victim to fresh air. Give artificial respiration if needed. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

Ingestion: Do not induce vomiting unless directed to do so by medical personnel. Keep the victim calm and warm. Get immediate medical attention.

SECTION 5: FIRE FIGHTING MEASURES

Flash Point: 46°C (114°F) **Flammable Limits:** LEL: 1.5 vol %
UEL: 17.4 vol %

Extinguishing Media: Use water fog or spray, alcohol foam, carbon dioxide or dry chemical.

Special Fire Fighting Procedures: Wear NIOSH approved, positive pressure, self-contained breathing apparatus and full protective clothing. Cool fire exposed containers with water.

Unusual Fire Hazards: Vapors are heavier than air and may travel along surfaces to remote ignition sources and flash back. Vapors may form explosive mixtures with air in confined areas.

Hazardous Decomposition Products: Oxides of carbon and nitrogen, hydrogen chloride, chlorine compounds and unknown materials. Thermal decomposition of polymer may yield spontaneously flammable residues. Prolonged exposure to air and sunlight may form unstable, explosive peroxides.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Spill: Remove all ignition sources such as open flames, spark producing equipment, pilot lights, etc. Wear appropriate protective clothing to prevent eye and skin contact including impervious gloves, safety goggles and respirator if needed. Ventilate area. Cover with and inert absorbent material and collect into an appropriate container for disposal. Report spills and releases as required to appropriate authorities.

SECTION 7: HANDLING AND STORAGE

Handling: Avoid breathing vapors, aerosols and mists. Use with adequate ventilation. Avoid contact with the eyes, skin and clothing. Always wear impervious gloves, chemical safety goggles and protective clothing when handling this material. Wash thoroughly after handling. Do not eat, drink or smoke in the work area. Keep product away from heat, sparks, flames and all other sources of ignition. No smoking in storage or use areas. Keep containers closed when not in use. If peroxide formation is suspected, do not move or open container.

Storage: Store in a cool, dry, well-ventilated location away from incompatible materials. Keep containers tightly closed when not in use. Store away from light.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Chemical Name	Exposure Limits
2-(1-Methoxy)propyl acetate (Propylene glycol monomethyl ether acetate, PGMEA)	100 ppm TWA (AIHA WEEL) 50 ppm DFG MAK
bis(2-methoxyethyl)ether) (diethylene glycol dimethyl ether/diglyme)	None Established (PEL/TLV)
Polymer	None Established (PEL/TLV)

Ventilation: Use with adequate general or local exhaust ventilation to maintain exposure levels below the occupational exposure limits. Use explosion proof electrical equipment and wiring where required.

Respiratory Protection: If needed, a NIOSH approved respirator with organic vapor cartridges may be used. For higher exposures (greater than 10 times the TLV), a supplied air respirator may be required. Respirator selection and use should be based on contaminant type, form and concentration. Follow OSHA 1910.134, ANSI Z88.2 and good Industrial Hygiene practice.

Skin Protection: Impervious gloves are recommended. Based on available test data, 4H or Silver Shield gloves are suggested.

Eye Protection: Chemical safety goggles recommended.

Other Protective Equipment: Impervious clothing is required to prevent skin contact and contamination of personal clothing. An eye wash facility and safety shower should be available in the work area.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Liquid with a sweet odor.
pH: Not available
Boiling Point: 146-162°C
Vapor Pressure: 3.7 mmHg @ 20°C (PGMEA)
Vapor Density: 4.6

Specific Gravity: Not available
Melting Point: Not Applicable
Water Solubility: Partially Soluble
Evaporation Rate: Not available

SECTION 10: STABILITY AND REACTIVITY

Stability: **Stable:** X **Unstable:**
Stable under normal temperatures and pressure.

Incompatibility/Conditions to Avoid: Strong oxidizing agents, strong acids, strong alkalis, reducing agents. Keep away from heat, sparks, flames and other sources of ignition. Avoid prolonged exposure to light and air.

Hazardous Decomposition Products: Combustion will produce oxides of carbon and nitrogen, hydrogen chloride, chlorine compounds and unknown materials. Thermal decomposition of polymer may yield spontaneously flammable residues. Prolonged exposure to air and sunlight may form unstable, explosive peroxides.

Hazardous Polymerization: **May Occur:** **Will not occur:** X

SECTION 11: TOXICOLOGICAL INFORMATION

Potential Health Effects:

Eye: May cause moderate eye irritation. Corneal injury is possible.

Skin: May cause irritation with prolonged or repeated exposure. 2-(1-Methoxy)propyl acetate and bis(2-Methoxyethyl)ether) may be absorbed through the skin causing symptoms of headache, dizziness, nausea, and drowsiness.

Inhalation: Inhalation of vapors, mists, or aerosols may cause nose and throat irritation with the possibility of central nervous system depression. Symptoms of central nervous system depression include headache, dizziness, drowsiness, nausea and unconsciousness.

Ingestion: Swallowing may cause gastrointestinal irritation and central nervous system depression with symptoms similar to those described under inhalation.

Chronic Hazards: Chronic absorption may cause kidney or liver damage based on studies with laboratory animals. bis(2-Methoxyethyl)ether has been reported to cause adverse reproductive effects in laboratory animals.

Carcinogen Status: None of the components of this product present at 0.1% or greater are listed as carcinogens by OSHA, IARC or NTP.

Medical Conditions Aggravated by Exposure: Pre-existing skin and kidney diseases.

Acute Toxicity Values:
2-(1-Methoxy)propyl acetate: Oral rat LD50 - 8532 mg/kg
Skin rabbit LD50 - >5 gm/kg
bis(2-methoxyethyl)ether: Oral rat LD50 - 5400 mg/kg
Polymer: No toxicity data is available

SECTION 12: ECOLOGICAL INFORMATION

2-(1-Methoxy)propyl acetate: LC50 Fathead minnow - 161 mg/mL (static); LC50 Daphnia Magna - 408 mg/L (static)

SECTION 13: DISPOSAL INFORMATION

Dispose in accordance with all local, state and federal regulations.

SECTION 14: TRANSPORT INFORMATION

DOT Shipping Name: Resin Solution, Flammable ERG #127
DOT Hazard Class: 3, PG III
UN Number: UN1866
DOT Labels Required (49CFR172.101): Flammable Liquid (See 173.120 for domestic shipment exemption for combustible liquids)
Hazardous Substance (49CFR172.101): None
Hazardous Substance (49CFR172.101): None
Reportable Quantity: N/A

IATA Shipping Name: Resin Solution, Flammable
IATA Hazard Class: 3, PG III
UN Number: UN1866
IATA Hazard Labels Required: Flammable Liquid

SECTION 15: REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS:

CERCLA 103 Reportable Quantity: Not applicable

SARA TITLE III:

Hazard Category for Section 311/312: Acute Health, Chronic Health, Fire Hazard

Section 313 Toxic Chemicals: This product contains the following chemicals subject to SARA Title III Section 313 Reporting requirements: bis(2-methoxyethyl)ether CAS#111-96-6 30-50%
(glycol ether compound)

Section 302 Extremely Hazardous Substances (TPQ): None

EPA Toxic Substances Control Act (TSCA) Status: All of the components are listed on the TSCA inventory.

STATE REGULATIONS:

California Proposition 65: These products contain the following substances known to the State of California to cause cancer: Carbon Tetrachloride less than 0.03%.

INTERNATIONAL REGULATIONS:

European Community Labeling : Contains bis(2-methoxyethyl)ether

R10 Flammable
R19 May form explosive peroxides.
R36 Irritating to eyes.
R60 May impair fertility.
R61 May cause harm to the unborn child.
Restricted to professional users.
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S45 In case of accident or if you feel unwell, seek medical advice immediately (show label where possible).
S53 Avoid exposure – obtain special instructions before use.
S51 Use only in well ventilated areas.

SECTION 16: OTHER INFORMATION

HMIS Ratings:	Health – 2*	Flammability - 2	Reactivity - 0
NFPA Ratings:	Health - 2	Flammability - 2	Reactivity - 0

EU Classes and Risk Phrases for Reference (See Sections 2 and 3):
Xi Irritant
T Toxic
R10 Flammable
R19 May form explosive peroxides.
R36 Irritating to eyes
R60 May impair fertility.
R61 May cause harm to the unborn child.

This above information is believed to be correct but does not propose to be all inclusive and shall be used only as a guide. Brewer Science shall not be held liable for any damage resulting from handling or from contact with the above product.