

**BREWER SCIENCE INC.
MATERIAL 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: ARC i-CON™-16

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

Information Phone Number: (573) 364-0300

Fax: (573) 368-3318

Emergency Phone Number:

Chemtrec Domestic North America: (800) 424-9300

Chemtrec International: (703) 527-3887

MSDS Date of Preparation: 04/10/06

Product Use: Anti-Reflective 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	20-40	Xi R10, R36
Ethyl lactate	97-64-3 / 203-539-1	60-80	Xi R10, R37, R41
Crosslinking Agent	Proprietary	<1	Xi R36
Catalyst	Proprietary	<0.1	Xi R36/37/38
Polymer Solids	Proprietary	1-10	Not Applicable

See Section 16 for further information on EU Classification.

SECTION 3: HAZARDS IDENTIFICATION

Liquid with a slight, sweet odor.

EMERGENCY OVERVIEW: Flammable liquid and vapor. May cause severe eye irritation. May cause skin, and respiratory irritation. May cause headache, dizziness, nausea and other symptoms of central nervous system depression.

EU Preparation Classification (1999/45/EC): Flammable Irritant (Xi), R10, R36/37, R41

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.

Prepared By:	Safety & Environmental Units
Approved By:	RMG/Safety & Environmental Units
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SECTION 5: FIRE AND EXPLOSION DATA

Flash Point: 46°C (114°F)

Flammable Limits: LEL: 1.3 vol % (PGMEA)
UEL: 13.1 vol % (PGMEA)

Extinguishing Media: Use water fog or spray, universal 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.

Hazardous Decomposition Products: Combustion will produce oxides of carbon and nitrogen, formaldehyde and unknown materials.

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.

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

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Chemical Name	Exposure Limits
2-(1-Methoxy)propyl acetate	100 ppm TWA (AIHA WEEL)
Ethyl lactate	None Established (PEL/TLV)
Crosslinking Agent	None Established (PEL/TLV)
Catalyst	None Established (PEL/TLV)
Polymer Solids	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 exposure limit), 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.

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SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Liquid with a slight, sweet odor.

pH: Not available

Boiling Point: 146 - 154°C

Vapor Pressure: 3.7 mmHg @ 20°C (PGMEA)

Vapor Density: 4.6 (PGMEA)

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:**

Incompatibility/Conditions to Avoid: Strong oxidizing agents. Keep away from heat, sparks, flames and other sources of ignition.

Hazardous Decomposition Products: Combustion will produce oxides of carbon and nitrogen, formaldehyde and unknown materials.

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

SECTION 11: TOXICOLOGICAL INFORMATION

Potential Health Effects:

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

Skin: May cause irritation with prolonged or repeated exposure. 2-(1-Methoxy)propyl acetate 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.

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

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

Acute Toxicity Values:

2-(1-Methoxy)propyl acetate: Oral rat LD50 - 8532 mg/kg

Skin rabbit LD50 - >5 gm/kg

Ethyl Lactate: Oral rat LD50 - >5000 mg/kg

Skin rabbit LD50 - >5000 mg/kg

Crosslinking Agent: Oral rat LD50 - >4400 mg/kg (estimated)

Inhalation rat LC50 - >17 mg/L (4 Hr – estimated)

Skin rabbit LD50 - >1900 mg/kg (estimated)

Catalyst: Oral rat LD50 – 2570 mg/kg

Polymer: No toxicity data is available

SECTION 12: ECOLOGICAL INFORMATION

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

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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
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: None

Section 302 Extremely Hazardous Substances (TPQ): None


EPA Toxic Substances Control Act (TSCA) Status: This product contains a substance(s) that is not listed on the EPA TSCA inventory. A low volume exemption notice has been filed. This exemption restricts the use of this product to Microelectronic Manufacturing Applications.

STATE REGULATIONS:

California Proposition 65: These products contain the following substances known to the State of California to cause cancer and/or reproductive harm: Formaldehyde (<0.003%) and Toluene (<0.00005%).

INTERNATIONAL REGULATIONS:

European Community Labeling:

	R10 Flammable R36/37 Irritating to eyes and respiratory system. R41 Risk of serious damage to eyes. S25 Avoid contact with eyes. S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S39 Wear eye/face protection. S51 Use only in well ventilated areas.
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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
- R10 Flammable
- R36 Irritating to eyes.
- R37 Irritating to respiratory system.
- R36/37/38 Irritating to eyes, respiratory system and skin.
- R41 Risk of serious damage to eyes.

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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.

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