
1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Code	13220
Trade Name	Shipley BPR100 Photoresist
Manufacturer/Supplier	Shipley Company
Address	455 Forest St. Marlborough, Massachusetts 01752
Phone Number	(508) 481-7950
Emergency Phone Number	(508) 481-7950
Chemtrec #	(800) 424-9300
MSDS first issued	13 December 2001
MSDS data revised	
Prepared By:	Environmental, Health & Safety Department
Local Sales Company	Shipley Company, 455 Forest Street, Marlboro, MA 01752 (508-481-7950)

2. COMPOSITION/INFORMATION ON THE INGREDIENTS

Components without CAS numbers are Trade Secret

Component Name	CAS# / Codes	Concentration
Electronic grade propylene glycol monomethyl ether	107-98-2	< 40.00
other esters		< 10.00
Acrylate ester		< 15.00
acrylic copolymer dye		< 40.00
residual acrylate monomer		< 1.00
Alicyclic ketone		< 5.00
ethyl acrylate	140-88-5	< 1.00

3. HAZARD IDENTIFICATION

Main Hazards	- Combustible - Irritant - Carcinogen - Sensitizer - Skin - Eye - Respiratory System - Nervous System - Kidney - Liver
Routes of Entry	Inhalation, ingestion, eye and skin contact, absorption.
Carcinogenic Status	Listed as carcinogenic by NTP and IARC.
Target Organs	- Skin - Eye - Respiratory System - Nervous System - Liver - Kidney
Health Effects - Eyes	Liquid or vapor may cause pain, transient irritation and superficial corneal effects.
Health Effects - Skin	Material may cause slight irritation on prolonged or repeated contact. Repeated and/or prolonged contact may lead to: - drowsiness - liver damage - kidney damage - central nervous system depression - allergic

3. HAZARD IDENTIFICATION

	sensitization
Health Effects - Ingestion	A large dose may have the following effects: - drowsiness - liver damage - kidney damage - central nervous system depression - delayed nerve and eye damage
Health Effects - Inhalation	Exposure to vapor at high concentrations may have the following effects: - irritation of nose, throat and respiratory tract - liver damage - kidney damage - central nervous system depression - allergic sensitization

4. FIRST AID MEASURES

First Aid - Eyes	Immediately flush the eye with plenty of water for at least 15 minutes, holding the eye open. Obtain medical attention if soreness or redness persists.
First Aid - Skin	Wash skin with water. Continue washing for at least 15 minutes. Obtain medical attention if blistering occurs or redness persists.
First Aid - Ingestion	Wash out mouth with water. Have victim drink 1-3 glasses of water to dilute stomach contents. Do not induce vomiting. Obtain medical attention. Never administer anything by mouth if a victim is losing consciousness, is unconscious or is convulsing.
First Aid - Inhalation	Remove from exposure. If there is difficulty in breathing, give oxygen. Seek medical attention if symptoms persist.
Advice to Physicians	Treat symptomatically.

5. FIRE FIGHTING MEASURES

Extinguishing Media	Use water spray, foam, dry chemical or carbon dioxide. Keep containers and surroundings cool with water spray.
Special Fire-Fighting Procedures	This product may give rise to hazardous vapors in a fire. Vapors can travel a considerable distance to a source of ignition and result in flashback.
Unusual Fire & Explosion Hazards	Pressure may build up in closed containers with possible liberation of combustible vapors.
Protective Equipment for Fire-Fighting	Wear full protective clothing and self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Spill Procedures	Contain and absorb using earth, sand or other inert material. Transfer into suitable containers for recovery or disposal. Finally flush area with plenty of water.
Personal Precautions	Wear appropriate protective clothing. Wear respiratory protection. Eliminate all sources of ignition.
Environmental Precautions	Prevent the material from entering drains or water courses.

7. HANDLING AND STORAGE

Handling	Use local exhaust ventilation. Avoid contact with eyes, skin and clothing. Keep container tightly closed when not in use.
Storage	Store in original containers. Store away from sources of heat or ignition. Storage area should be: - cool - dry - well ventilated - out of direct sunlight
Other	None known.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Standards

Electronic grade propylene glycol monomethyl ether ACGIH: TLV 100ppm (369mg/m³) 8h TWA. ACGIH: STEL 150ppm (553mg/m³) 15min TWA. OSHA: PEL 100ppm (360mg/m³) 8h TWA. OSHA: STEL 150ppm (540mg/m³) 15min TWA. UK EH40: OES 100ppm (360mg/m³) 8h TWA. UK EH40: OES 300ppm (1080mg/m³) 15min TWA. Can be absorbed through skin.

residual acrylate monomer None assigned.

Alicyclic ketone None Established.

ethyl acrylate ACGIH: TLV 5ppm (20mg/m³) 8h TWA. ACGIH: STEL 15ppm (61mg/m³) 15min TWA. OSHA: PEL 25ppm (100mg/m³) 8h TWA. UK EH40: OES 5ppm (20mg/m³) 8h TWA. UK EH40: OES 15ppm (60mg/m³) 15min TWA. Can be absorbed through skin.

Engineering Control Measures Engineering methods to prevent or control exposure are preferred. Methods include process or personnel enclosure, mechanical ventilation (local exhaust), and control of process conditions.

Respiratory Protection Respiratory protection if there is a risk of exposure to high vapor concentrations. The specific respirator selected must be based on the airborne concentration found in the workplace and must not exceed the working limits of the respirator.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Hand Protection	Butyl rubber gloves. Other chemical resistant gloves may be recommended by your safety professional.
Eye Protection	Chemical goggles.
Body Protection	Normal work wear.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Color	Blue
Odor	Acrylate
VOC (g/l)	398
Specific Gravity	1.05
pH	Not applicable.
Boiling Range/Point (°C/F)	120/248
Flash Point (PMCC) (°C/F)	38.9/102
Explosion Limits (%)	Not determined.
Solubility in Water	Insoluble.
Vapor Density (Air = 1)	Heavier than air.
Evaporation Rate	Slower than ether
Vapor Pressure	Propylene Glycol Monomethyl Ether: 12.5 mmHg at 25 °C.

10. STABILITY AND REACTIVITY

Stability	Stable under normal conditions.
Conditions to Avoid	- contact with incompatible materials - Static discharge - High temperatures - Exposure to direct sunlight - freezing temperatures
Incompatibilities	- Strong oxidizing agents - Strong reducers - Strong acids - Strong bases - Free radical initiators - Inert gas - Oxygen scavengers - UV Radiation
Hazardous Polymerization	Will not occur.
Hazardous Decomposition Products	- carbon monoxide - carbon dioxide - oxides of nitrogen - acrylate monomers

11. TOXICOLOGICAL INFORMATION

Acute Data	Propylene Glycol Monomethyl Ether: Oral LD50 (rat) 7200mg/kg. Dermal LD50 (rabbit) 13000mg/kg.
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11. TOXICOLOGICAL INFORMATION

	<p>Alicyclic ketone: Oral LD50 (rat) 1800mg/kg. Dermal LD50 (rat) >2000mg/kg. Application to rabbit skin produced no sign of dermal irritation. Single application to the rabbit eye produced no signs of ocular irritation. Substance has shown no evidence of skin sensitization potential.</p>
Chronic/Subchronic Data	<p>Acrylate ester: Skin contact may result in allergic sensitization.</p> <p>Ethyl acrylate: IARC assessment: this product is possibly carcinogenic to humans (Group 2B). NTP assessment: this product is reasonably anticipated to be a human carcinogen.</p>
Genotoxicity	<p>Propylene glycol monomethyl ether: The product did not exhibit mutagenic activity in the following systems (with and without metabolic activation): - Chinese hamster ovary cells No significant mutagenic response was observed and the carcinogenic potential of the material is therefore considered to be low.</p> <p>Alicyclic ketone: It was not mutagenic when tested in bacterial or mammalian systems.</p>
Reproductive/Developmental Toxicity	<p>Propylene glycol monomethyl ether: Inhalation teratology testing of this solvent (with less than 3% beta isomer) revealed no maternally toxic, teratogenic or fetotoxic responses in rats or rabbits exposed to concentrations as high as 1,500 ppm. Concentrations reaching nearly 3,000 ppm produced maternal toxicity in rats. When maternal toxicity occurred slight fetotoxicity but no teratogenicity was also observed in these animals. These effects were not observed in rabbits exposed to this dose level.</p> <p>Proylene glycol monomethyl ether: Dermal teratology testing of this solvent (with less than 3% beta isomer) revealed no maternally toxic, teratogenic or fetotoxic responses in rats or rabbits exposed to concentrations of 1,000 and 2,000 mg/kg per day.</p>
Additional Data	None known.

12. ECOLOGICAL INFORMATION

Mobility	No relevant studies identified.
Persistence/Degradability	No relevant studies identified.
Bio-accumulation	No relevant studies identified.
Ecotoxicity	Propylene glycol monomethyl ether: Tests on the following species

12. ECOLOGICAL INFORMATION

gave a LC50 of 20800mg/litre: - fathead minnows
Tests on the following species gave a LC50 of 23300mg/litre: - daphnia

Alicyclic ketone: Tests on the following species gave a 96 h LC50 of 9 ppm: - zebra fish
Tests on the following species gave a 24 h EC50 of 15 ppm: - daphnia

13. DISPOSAL CONSIDERATIONS

Product Disposal	Incineration is the recommended method of disposal. Dispose of in accordance with all applicable local and national regulations.
Container Disposal	Labels should not be removed from containers until they have been cleaned. Empty containers may contain hazardous residues. Dispose of containers with care.

14. TRANSPORT INFORMATION

DOT Ground:	Not Regulated per 49 CFR 173.150(f)(2)
UN Proper Shipping Name	Resin solution
UN Class	(3) Flammable Liquid
UN Number	UN1866
UN Packaging Group	III
N.O.S. 1:	None.
N.O.S. 2:	None.
Subsidiary Risks	None.
CERCLA RQ	None.
Marine Pollutant	No.

15. REGULATORY INFORMATION

TSCA Listed	All components of this product are listed on the U.S. Toxic Substances Control Act Chemical Inventory (TSCA Inventory) or are exempted from listing because a Low Volume Exemption has been granted in accordance with 40 CFR 723.50.
TSCA Exemptions	
TSCA Sec.12(b) Export Notification	This product does not contain any substances subject to Section 12(b) export notification.
WHMIS Classification	B.3, D.2.A.
California Proposition 65	This product contains the following chemicals that have been found by the State of California to cause cancer, birth defects or other reproductive harm: - ethyl acrylate

15. REGULATORY INFORMATION

SARA TITLE III-Section 311/312 Categorization (40 CFR 370)	Immediate, delayed, flammability hazard
SARA TITLE III-Section 313 (40 CFR 372)	This product contains a chemical which is listed in Section 313 at or above de minimis concentrations. The following listed chemicals are present (quantity present is found elsewhere on this MSDS): - ethyl acrylate (140-88-5)

16. OTHER INFORMATION

NFPA Rating- FIRE	2
NFPA Rating- HEALTH	2
NFPA Rating- REACTIVITY	0
NFPA Rating- SPECIAL	None.

Revisions Highlighted Abbreviations

CAS#:	Chemical Abstract Services Number
ACGIH:	American Conference of Governmental Industrial Hygienists
OSHA:	Occupational Safety and Health Administration
TLV:	Threshold Limit Value
PEL:	Permissible Exposure Limit
STEL:	Short Term Exposure Limit
NTP:	National Toxicology Program
IARC:	International Agency for Research on Cancer
R:	Risk
S:	Safety
LD50:	Lethal Dose 50%
LC50:	Lethal Concentration 50%
BOD:	Biological Oxygen Demand
Koc:	Soil Organic Carbon Partition Coefficient.
TLm:	Median Tolerance Limit

Disclaimer

The data contained herein is based on information that Shibley Company believes to be reliable, but no expressed or implied warranty is made with regard to the accuracy of such data or its suitability for a given situation. Such data relates only to the specific product described and not to such products in combination with any other product and no agent of Shibley Company is authorized to vary any of such data. Shibley Company and its agents disclaim all liability for any action taken or foregone on reliance upon such data.