1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Code: 33990
Trade Name: MICROPOSIT STR 1075 PHOTO RESIST
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: 27 July 1996
MSDS data revised: 16 February 1999
Prepared By: Gregory S. Dripps
Local Sales Company: Shipley Company, 455 Forest Street, Marlboro, MA 01752

2. COMPOSITION/INFORMATION ON THE INGREDIENTS

Hazardous Components in Preparation for US

<table>
<thead>
<tr>
<th>Component Name</th>
<th>Codes</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>ethyl lactate</td>
<td>97-64-3</td>
<td>48.00 - 53.80</td>
</tr>
<tr>
<td>Cresol Novolak Resin</td>
<td></td>
<td>30.00 - 40.00</td>
</tr>
<tr>
<td>n-butyl acetate</td>
<td>123-86-4</td>
<td>1.00 - 5.00</td>
</tr>
<tr>
<td>xylene</td>
<td>1330-20-7</td>
<td>1.00 - 5.00</td>
</tr>
<tr>
<td>Diazo Photoactive Compound</td>
<td></td>
<td>1.00 - 10.00</td>
</tr>
<tr>
<td>cresol</td>
<td>120-77-3</td>
<td>0.10 - 0.20</td>
</tr>
<tr>
<td>Organic Siloxane Surfactant</td>
<td></td>
<td>0.01 - 1.00</td>
</tr>
</tbody>
</table>

3. HAZARD IDENTIFICATION

Main Hazards: - Irritant - Combustible - Nervous System - Skin - Eye - Kidney - Liver
Routes of Entry: Inhalation, ingestion, eye and skin contact, absorption.
Carcinogenic Status: Not considered carcinogenic by NTP, IARC and OSHA
Target Organs: Nervous System - Skin - Eye - 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 or prolonged contact may produce defatting of the skin leading to irritation and dermatitis.
Health Effects - Ingestion: Swallowing may have the following effects:
- Irritation of mouth, throat and digestive tract
- Nausea
- Vomiting
- Diarrhea
A large dose may have the following effects:
- Liver damage
- Kidney damage
- Central nervous system depression
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

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. Obtain medical attention if blistering occurs or redness persists.
First Aid - Ingestion: Wash out mouth with water. Obtain medical attention.
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

Split 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

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Standards: ethyl lactate: None assigned.
n-butyl acetate
ACGIH: TLV 150ppm (710mg/m³) 8h TWA. ACGIH: STEL 200ppm (950mg/m³) 15min TWA. OSHA: PEL 150ppm (710mg/m³) 8h TWA. OSHA: STEL 200ppm (950mg/m³) 15min TWA.

xylene
ACGIH: TLV 100ppm (435mg/m³) 8h TWA. ACGIH: STEL 150ppm (655mg/m³) 15min TWA. OSHA: PEL 100ppm (435mg/m³) 8h TWA. OSHA: STEL 150ppm (655mg/m³) 15min TWA.

cresol
ACGIH: TLV 5ppm (22mg/m³) 8h TWA. OSHA: PEL 5ppm (22mg/m³) 8h TWA. UK EH40: OES 5ppm (22mg/m³) 8h TWA. Can be absorbed through skin.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State
Viscous liquid

Color
Red

Odor
Sweet

VOC (g/l)
578.27

Specific Gravity
1.02

pH
Neutral

Boiling Range/Point (°C/F)
begins @ 120 / 248

Flash Point (PMCC) (°C/F)
39.4-40.5/103-105

Explosion Limits (%)
n-butyl acetate: Lower limit 1.7%
xylene: Lower limit 1.1%
ethyl lactate: Lower limit 1.6%

Solubility in Water
Slightly soluble

Vapor Density (Air = 1)
Heavier than air.

Evaporation Rate
Slower than ether

Vapor Pressure
Ethyl Lactate: 2.0 mmHg at 20 °C.
n-butyl acetate: 15.0 mmHg at 25 °C.
xylene: 6.0 mmHg at 20 °C.

10. STABILITY AND REACTIVITY

Stability
Stable under normal conditions.

Conditions to Avoid
- High temperatures - Static discharge

Incompatibilities
- Oxidizing agents - Bases - Acids

Hazardous Polymerization
Will not occur.

Hazardous Decomposition Products
- carbon monoxide - Carbon Dioxide

11. TOXICOLOGICAL INFORMATION

Acute Data
ethyl lactate: Oral LD50 (mouse) 2500mg/kg.
n-butyl acetate: Oral LD50 (rat) 14130mg/kg.
xylene: Oral LD50 (rat) 4300mg/kg.

Chronic/Subchronic Data
No data.

Genotoxicity
It was not mutagenic when tested in bacterial or mammalian systems.

Reproductive/Developmental Toxicity
Developmental effects were seen in laboratory animals only at dose levels that were maternally toxic.

Additional Data
None known.

12. ECOLOGICAL INFORMATION

Mobility
No relevant studies identified.

Persistence/Degradability
n-butyl acetate: BOD5 = 46.2% of ThOD. BOD20 = 65.7% of ThOD.
ethyl lactate: COD = 0.00166g/g.

Bio-accumulation
Product is not expected to bioaccumulate.

Ecotoxicity
n-butyl acetate: Tests on the following species gave a 96h LC50 of 44-205mg/litre:
- daphnia
ethyl lactate: Tests on the following species gave a 48h EC50 of 683mg/litre:
- 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
Flammable liquid, n.o.s.

UN Class
(3) Flammable Liquid

UN Number
UN1993

UN Packaging Group
II

N.O.S. 1:
ethyl lactate

N.O.S. 2:
xylene

Subsidiary Risks
None.
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**
Data not available.

**WHMIS Classification**
D.2 B 8.3

**MA Right To Know Law**
All components have been checked for inclusion on the Massachusetts Substance List (MSL). Those components present at the de minimus concentration have been identified in the hazardous ingredients section of the MSDS.

**California Proposition 65**
This product does not contain materials which the State of California has found to cause cancer, birth defects or other reproductive harm.

**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.
- xylene (1330-20-7)

16. OTHER INFORMATION

**NFPA Rating- FIRE**
2

**NFPA Rating- HEALTH**
2

**NFPA Rating- REACTIVITY**
0

**NFPA Rating- SPECIAL**
None.

**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
TLm: Median Tolerance Limit

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