1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

| Product Code | 16570 |
| Trade Name   | EAGLE NT-90 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 | 16 October 1996 |
| MSDS data revised | 15 April 1998 |

Prepared By: Amy C. Nichols
Local Sales Company: Shipley Company, 455 Forest Street, Marlboro, MA 01752 (508-481-7950)

2. COMPOSITION/INFORMATION ON THE INGREDIENTS

<table>
<thead>
<tr>
<th>Component Name</th>
<th>CAS# / Codes</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronic grade propylene glycol monomethyl ether</td>
<td></td>
<td>65.00 - 70.00</td>
</tr>
<tr>
<td>other esters</td>
<td></td>
<td>4.00 - 5.00</td>
</tr>
<tr>
<td>Acrylate ester</td>
<td></td>
<td>6.00 - 7.00</td>
</tr>
<tr>
<td>acrylic copolymer dye</td>
<td></td>
<td>20.00 - 21.00</td>
</tr>
<tr>
<td>residual acrylate monomer</td>
<td></td>
<td>0.20 - 0.30</td>
</tr>
<tr>
<td>ethyl acrylate</td>
<td>140-88-5</td>
<td>0.08 - 0.09</td>
</tr>
</tbody>
</table>

3. HAZARD IDENTIFICATION

**Main Hazards**
- Irritant
- Flammable
- Nervous system - Skin - Eye - Kidney - Liver - Sensitizer

**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 and/or prolonged contact may lead to: - drowsiness - liver damage - kidney damage - central nervous system depression - allergic sensitization

**Health Effects - Ingestion**
A large dose may have the following effects:
- drowsiness - 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 - allergic sensitization

### 1. 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.

### 2. 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.

### 3. 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.

### 4. 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

### 5. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Occupational Exposure Standards
### Electronic grade propylene glycol monomethyl ether

ACGIH: TLV 100ppm (360mg/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.

### 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 is advisable 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.

### Hand Protection

Butyl rubber gloves.

### Eye Protection

Chemical goggles.

### Body Protection

Normal work wear.

### Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical State</td>
<td>Liquid</td>
</tr>
<tr>
<td>Color</td>
<td>Blue</td>
</tr>
<tr>
<td>Odor</td>
<td>Acrylate</td>
</tr>
<tr>
<td>VOC (g/l)</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>0.990</td>
</tr>
<tr>
<td>pH</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Boiling Range/Point (°C/F)</td>
<td>145.8/295</td>
</tr>
<tr>
<td>Flash Point (PMCC) (°C/F)</td>
<td>26.6 / 80</td>
</tr>
<tr>
<td>Explosion Limits (%)</td>
<td>Upper limit 10.9. Lower limit 1.5 at 151°C</td>
</tr>
<tr>
<td>Solubility in Water</td>
<td>Completely soluble.</td>
</tr>
<tr>
<td>Vapor Density (Air = 1)</td>
<td>Heavier than air.</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>Lower than ether.</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>Propylene Glycol Monomethyl Ether: 12.5 mmHg at 25°C.</td>
</tr>
</tbody>
</table>

### Stability and Reactivity

Stable under normal conditions.

### Conditions to Avoid
- High temperatures - Static discharge

### Incompatibilities
- Oxidizing agents

### Hazardous Polymerization
Will not occur.

### Hazardous Decomposition Products
- carbon monoxide - Carbon Dioxide

### Toxico logical Information

**Acute Data**

Propylene Glycol Monomethyl Ether: Oral LD50 (rat) 6065mg/kg.

**Chronic/Subchronic Data**

This product is not expected to cause any carcinogenic effects.

**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.
**Mobility**
The product will dissolve rapidly in water. The product is poorly absorbed onto soils or sediments. The product will leach into soil.

**Persistence/Degradability**
Major components are readily biodegradable but the product contains components that are expected to be non-degradable.

**Bio-accumulation**
Product is not expected to bioaccumulate.

**Ecotoxicity**
Propylene glycol monomethyl ether: Tests on the following species gave a LC50 of 20800mg/litre: - fathead minnows Tests on the following species gave a LC50 of 23800mg/litre: - daphnia

**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.

**TRANSPORT INFORMATION**

**DOT Ground:** 1-Methoxy-2-Propanol
**UN Proper Shipping Name** 1-Methoxy-2-Propanol
**UN Class** (3) Flammable Liquid
**UN Number** UN3092
**UN Packaging Group** III
**N.O.S. 1:** None.
**N.O.S. 2:** None.
**Subsidiary Risks** None.
**ADR/RID Substance Identification Number** CLASS 3 - 31(c)
**CERCLA RQ** Ethyl acrylate (1000#)
**Marine Pollutant** No.

**REGULATORY INFORMATION**

**TSCA Listed** Yes
**TSCA Exemptions** 0,2,8 B.2
**WHMIS Classification** D.2.B B.2
**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. The following listed chemicals are present: (quantity present is found elsewhere on this MSDS)
- ethyl acrylate (140-88-5)

**OTHER INFORMATION**

**NFPA Rating- FIRE** 3
<table>
<thead>
<tr>
<th>NFPA Rating - HEALTH</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>NFPA Rating - REACTIVITY</td>
<td>0</td>
</tr>
<tr>
<td>NFPA Rating - SPECIAL</td>
<td>None.</td>
</tr>
</tbody>
</table>

Revisions Highlighted

Transport Information

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

Disclaimer

The data contained herein is based on information that Shipley 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 Shipley Company is authorized to vary any of such data. Shipley Company and its agents disclaim all liability for any action taken or foregone on reliance upon such data.