1. PRODUCT AND COMPANY IDENTIFICATION

MEGAPOSIT(TM) SPR(TM) 220-7.0 Positive Photoresist

Revision date: 08/17/2010

Supplier
Rohm and Haas Electronic Materials LLC
455 Forest Street
Marlborough, MA 01752 United States of America

For non-emergency information contact: 508-481-7950

Emergency telephone
Chemtrec 800-424-9300
Rohm and Haas Emergency 215-592-3000

2. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cresol novolak resin</td>
<td></td>
<td>25.0 - 35.0 %</td>
</tr>
<tr>
<td>Ethyl lactate</td>
<td>97-64-3</td>
<td>25.0 - 35.0 %</td>
</tr>
<tr>
<td>Anisole</td>
<td>100-66-3</td>
<td>10.0 - 20.0 %</td>
</tr>
<tr>
<td>Diazo Photoactive Compound</td>
<td></td>
<td>1.0 - 10.0 %</td>
</tr>
<tr>
<td>2-Methyl Butyl Acetate</td>
<td>624-41-9</td>
<td>1.0 - 10.0 %</td>
</tr>
<tr>
<td>n-amyl acetate</td>
<td>628-63-7</td>
<td>1.0 - 10.0 %</td>
</tr>
<tr>
<td>Cresol</td>
<td>1319-77-3</td>
<td>&lt; 1.0 %</td>
</tr>
<tr>
<td>Organic Siloxane Surfactant</td>
<td></td>
<td>&lt; 1.0 %</td>
</tr>
</tbody>
</table>

3. HAZARDS IDENTIFICATION

Emergency Overview

**Appearance**

- **Form**: liquid
- **Colour**: Red Amber
- **Odour**: ester-like
Hazard Summary

CAUTION!
Combustible liquid and vapor. Causes irritation to eyes, nose, and respiratory tract. Prolonged, repeated contact, inhalation, ingestion, or absorption through the skin, may cause adverse effects to internal organ systems.

Potential Health Effects

Primary Routes of Entry: Inhalation, ingestion, eye and skin contact, absorption.

Eyes: May cause pain, transient irritation and superficial corneal effects.

Skin: Material may cause irritation. Prolonged or repeated exposure may have the following effects: central nervous system depression drowsiness defatting of skin leading to irritation and dermatitis

Ingestion: Swallowing may have the following effects: irritation of mouth, throat and digestive tract Repeated doses may have the following effects: central nervous system depression drowsiness

Inhalation: Inhalation may have the following effects: irritation of nose, throat and respiratory tract Higher concentrations may have the following effects: systemic effects similar to those resulting from ingestion

Target Organs: Eye Respiratory System Skin nervous system

Carcinogenicity
Not considered carcinogenic by NTP, IARC, and OSHA

4. FIRST AID MEASURES

Inhalation: Remove from exposure. If there is difficulty in breathing, give oxygen. Seek medical attention if symptoms persist.

Skin contact: Wash skin with water. Continue washing for at least 15 minutes. Obtain medical attention if blistering occurs or redness persists.

Eye contact: 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.

Ingestion: Wash out mouth with water. Have victim drink 1-3 glasses of water to dilute stomach contents. Induce vomiting if person is conscious. Immediate medical attention is required. Never administer anything by mouth if a victim is losing consciousness, is unconscious or is convulsing.

Notes to physician: Treat symptomatically.
5. FIRE-FIGHTING MEASURES

Flash point  
45 °C (113 °F)

Suitable extinguishing media: Use water spray, foam, dry chemical or carbon dioxide. Keep containers and surroundings cool with water spray.

Specific hazards during fire fighting: 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.

Special protective equipment for fire-fighters: Wear full protective clothing and self-contained breathing apparatus.

Further information: Pressure may build up in closed containers with possible liberation of combustible vapors.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Wear suitable protective clothing.
Wear respiratory protection.
Eliminate all ignition sources.

Environmental precautions
Prevent the material from entering drains or water courses.
Do not discharge directly to a water source.
Advise Authorities if spillage has entered watercourse or sewer or has contaminated soil or vegetation.

Methods for cleaning up
Contain spills immediately with inert materials (e.g., sand, earth).
Transfer into suitable containers for recovery or disposal.
Finally flush area with plenty of water.

7. HANDLING AND STORAGE

Handling
Use local exhaust ventilation. Avoid contact with eyes, skin and clothing. Keep container tightly closed.

Storage
Storage conditions: Store in original container. Keep away from heat and sources of ignition.
Storage area should be: cool dry well ventilated out of direct sunlight
Further information on storage conditions: Keep away from heat, sparks, flame, and other sources of ignition. Practice good personal hygiene to prevent accidental exposure.
8. EXPOSURE CONTROLS/PERSOMAL PROTECTION

Exposure limit(s)

Exposure limits are listed below, if they exist.

<table>
<thead>
<tr>
<th>Component</th>
<th>Regulation</th>
<th>Type of listing</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl lactate</td>
<td>Rohm and Haas</td>
<td>TWA</td>
<td>5 ppm</td>
</tr>
<tr>
<td></td>
<td>Rohm and Haas</td>
<td>STEL</td>
<td>15 ppm</td>
</tr>
<tr>
<td>2-Methyl Butyl Acetate</td>
<td>Rohm and Haas</td>
<td>TWA</td>
<td>50 ppm</td>
</tr>
<tr>
<td></td>
<td>Rohm and Haas</td>
<td>STEL</td>
<td>100 ppm</td>
</tr>
<tr>
<td></td>
<td>ACGIH</td>
<td>TWA</td>
<td>50 ppm</td>
</tr>
<tr>
<td></td>
<td>ACGIH</td>
<td>STEL</td>
<td>100 ppm</td>
</tr>
<tr>
<td>Cresol</td>
<td>ACGIH</td>
<td>TWA</td>
<td>5 ppm</td>
</tr>
<tr>
<td></td>
<td>ACGIH</td>
<td>SKIN_DES</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSHA_TRANS</td>
<td>PEL</td>
<td>22 mg/m3</td>
</tr>
<tr>
<td></td>
<td>OSHA_TRANS</td>
<td>SKIN_DES</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Z1A</td>
<td>TWA</td>
<td>22 mg/m3</td>
</tr>
<tr>
<td></td>
<td>Z1A</td>
<td>SKIN_FINAL</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ACGIHLIS_P</td>
<td>TWA Inhalable</td>
<td>20 mg/m3</td>
</tr>
<tr>
<td></td>
<td>ACGIHLIS_P</td>
<td>SKIN_DES Inhalable fraction and vapor.</td>
<td>20 mg/m3</td>
</tr>
<tr>
<td></td>
<td>ACGIH</td>
<td>TWA Inhalable</td>
<td>20 mg/m3</td>
</tr>
<tr>
<td></td>
<td>ACGIH</td>
<td>SKIN_DES Inhalable fraction and vapor.</td>
<td>20 mg/m3</td>
</tr>
</tbody>
</table>

Eye protection: Goggles

Hand protection: Butyl rubber gloves. Other chemical resistant gloves may be recommended by your safety professional.

Skin and body protection: Normal work wear.

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.

Engineering 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.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form: liquid
Colour: Red Amber
ODOUR
ester-like

PH
7

BOILING POINT/BOILING RANGE
150 °C (302 °F)

FLASH POINT
45 °C (113 °F)

Component: Ethyl lactate
Vapour pressure
1.7 mmHg at 20 °C (68 °F)

Component: Anisole
Vapour pressure
9.7 mmHg at 42 °C (108 °F)

Component: n-amyl acetate
Vapour pressure
5.0 mmHg at 25 °C (77 °F)

Relative vapour density
Heavier than air.

Water solubility
insoluble

Relative density
1.07

Evaporation rate
Slower than ether

VOC’s
710 g/l

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Hazardous reactions
Stable under normal conditions.

Conditions to avoid
High temperatures  Static discharge

Materials to avoid
Oxidizing agents  Bases  Acids

Hazardous decomposition products
Carbon monoxide, carbon dioxide, phenols, oxides of sulfur, nitrogen oxides (NOx).

Polymerisation
Will not occur.

11. TOXICOLOGICAL INFORMATION

Toxicological information on this product or its components appear in this section when such data is available.

Component: Ethyl lactate
Acute oral toxicity
LD50 rat > 2,000 mg/kg

Component: Anisole
Acute oral toxicity
LD50 rat 3,700 mg/kg

Component: 2-Methyl Butyl Acetate
Acute oral toxicity
Component: n-amyl acetate
   LD50 rat 12,306 mg/kg

Acute oral toxicity
Component: Cresol
   LD50 rat 1,454 mg/kg

Acute oral toxicity
Component: Ethyl lactate
   LC50 rat 4 h 5,400 mg/m3

Acute oral toxicity
Component: 2-Methyl Butyl Acetate
   LC50 rat 4 h >5.2 mg/l

Acute oral toxicity
Component: n-amyl acetate
   16,000 mg/m3

Acute oral toxicity
Component: Cresol
   LC50 rat 8 h 35.38 mg/l

Acute oral toxicity
Component: Ethyl lactate
   LD50 rat > 5,000 mg/kg

Acute dermal toxicity
Component: 2-Methyl Butyl Acetate
   LD50 rabbit 8,359 mg/kg

Acute dermal toxicity
Component: n-amyl acetate
   LD50 rabbit >17,500 mg/kg

Acute dermal toxicity
Component: Cresol
   LD50 rabbit 2,000 mg/kg

Acute dermal toxicity
Component: Ethyl lactate
   LD50 rabbit 2,000 mg/kg

Skin irritation
Component: 2-Methyl Butyl Acetate
   A single application to rabbit skin produced mild irritation.

Skin irritation
Component: Cresol
   Rabbit Corrosive

Skin irritation
Component: Ethyl lactate
   Single application to the rabbit eye produced conjunctival irritation.

Eye irritation
Component: 2-Methyl Butyl Acetate
   Rabbit Moderate eye irritation

Eye irritation
Component: Cresol
   Rabbit Corrosive

Eye irritation
Component: Ethyl lactate
   Rabbit Corrosive

Reproductive toxicity
No adverse reproductive effects were observed in experimental animals.
Component: n-amyl acetate
### Subchronic toxicity

**Inhalation rat**
- NOEL: 1,200 mg/kg
- none

Component: **n-amyl acetate**

**Reproductive toxicity**

Exposure of pregnant rabbits to vapor at 1500 ppm resulted in maternal toxicity. The following effects were observed: decreased body weight. No adverse reproductive effects were observed in experimental animals.

Component: **Cresol**

**Teratogenicity**

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

Component: **Cresol**

**Mutagenicity**

Not mutagenic in Ames Test. In vitro tests showed mutagenic effects.

### 12. ECOLOGICAL INFORMATION

Ecotoxicological information on this product or its components appear in this section when such data is available.

#### Ethyl lactate

**Ecotoxicity effects**

- **Toxicity to aquatic invertebrates**
  - EC50 Daphnia magna 48 h
  - 683 mg/l

#### Anisole

**Ecotoxicity effects**

- **Toxicity to algae**
  - Growth rate EC50 Pseudokirchneriella subcapitata (green algae) 96 h
  - 162 mg/l

#### 2-Methyl Butyl Acetate

**Ecotoxicity effects**

- **Toxicity to fish**
  - LC50 Fathead minnow (Pimephales promelas) 96 h
  - 69 mg/l

- **Toxicity to algae**
  - EC50 Pseudokirchneriella subcapita 96 h
  - >466 mg/l

- **Toxicity to aquatic invertebrates**
  - EC50 Daphnia magna 48 h
  - 40.9 mg/l

#### n-amyl acetate

**Ecotoxicity effects**

- **Toxicity to fish**
  - LC50 Mosquito fish (Gambusia affinis) 96 h
  - 65 mg/l

- **Toxicity to algae**
  - EC50 Algae 24 h
  - 550 mg/l

- **Toxicity to aquatic invertebrates**
  - EC50 Daphnia magna 24 h
  - 210 mg/l
Cresol

Ecotoxicity effects

Toxicity to fish
LC50 Zebra fish (Danio/Brachydanio rerio) 96 h
9 mg/l

Toxicity to fish
LC50 Bluegill sunfish (Lepomis macrochirus) 96 h
10 mg/l

Toxicity to bacteria
EC0 Pseudomonas putida 0.5 h
250 mg/l

13. DISPOSAL CONSIDERATIONS

Environmental precautions: Prevent the material from entering drains or water courses. Do not discharge directly to a water source. Advise Authorities if spillage has entered watercourse or sewer or has contaminated soil or vegetation.

Disposal
Dispose in accordance with all local, state (provincial), and federal regulations. Incineration is the recommended method of disposal for containers. Under RCRA, it is the responsibility of the product's user to determine at the time of disposal, whether the product meets RCRA criteria for hazardous waste. This is because the product uses, transformations, mixtures, processes, etc. may render the resulting materials hazardous.

Do not remove label until container is thoroughly cleaned. Empty containers may contain hazardous residues. This material and its container must be disposed of in a safe way.

14. TRANSPORT INFORMATION

DOT
Not regulated per 49CFR 173.150(f)(2)

IMO/IMDG
Proper shipping name RESIN SOLUTION
UN-Number UN 1866
Class 3
Packing group III

Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations

15. REGULATORY INFORMATION

Workplace Classification
OSHA: Combustible
Irritant

WHMIS: This product is a 'controlled product' under the Canadian Workplace Hazardous Materials Information System (WHMIS).
SARA TITLE III: Section 311/312 Categorizations (40CFR370): Immediate, delayed, flammability hazard

SARA TITLE III: Section 313 Information (40CFR372)
This product does not contain a chemical which is listed in Section 313 at or above de minimis concentrations.

US. Toxic Substances Control Act (TSCA): All components of this product are in compliance with the inventory listing requirements of the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

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.

16. OTHER INFORMATION

<table>
<thead>
<tr>
<th>NFPA Hazard Rating</th>
<th>Health</th>
<th>Fire</th>
<th>Reactivity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

**Legend**

<table>
<thead>
<tr>
<th>ACGIH</th>
<th>American Conference of Governmental Industrial Hygienists</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAc</td>
<td>Butyl acetate</td>
</tr>
<tr>
<td>OSHA</td>
<td>Occupational Safety and Health Administration</td>
</tr>
<tr>
<td>PEL</td>
<td>Permissible Exposure Limit</td>
</tr>
<tr>
<td>STEL</td>
<td>Short Term Exposure Limit (STEL):</td>
</tr>
<tr>
<td>TLV</td>
<td>Threshold Limit Value</td>
</tr>
<tr>
<td>TWA</td>
<td>Time Weighted Average (TWA):</td>
</tr>
<tr>
<td></td>
<td>Bar denotes a revision from prior MSDS.</td>
</tr>
</tbody>
</table>

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