1 Identification of the substance/mixture and of the company

· Product identifier
  · Trade name: MMA(8.5)MAA Copolymer Series Resists

· Product number:
  M310002, M310003, M310004, M310005, M310006, M310007, M310008, M310009, M310010, M310011,
  M310012, M310512, M310013, M310014, M310015

· Application of the substance / the preparation Photoresist

· Details of the supplier of the safety data sheet
  · Manufacturer/Supplier:
    MicroChem Corp
    90 Oak Street, PO Box 426
    Newton, MA 02464-0002
  · Information department:
    Product Safety
    Email: productsafety@microchem.com
  · Emergency telephone number:
    MicroChem Corp: 617-965-5511
    Chemtrec USA Emergency: 800-424-9300
    Chemtrec International Emergency: 703-527-3887

2 Composition/information on ingredients

· Chemical characterization: Mixtures

· Description: Mixture of the substances listed below with nonhazardous additions.

· Dangerous components:
  97-64-3 ethyl lactate H226; H318; H335 75-100%

· Additional Components:
  25086-15-1 Poly(methylmethacrylate/methacrylic acid) 5-25%

3 Hazards identification

· Classification of the substance or mixture

  GHS02 Flame
  H226 Flammable liquid and vapor.

  GHS05 Corrosion
  H318 Causes serious eye damage.

  GHS07
  H335 May cause respiratory irritation.

· Label elements

  GHS label elements The product is classified and labelled according to the Globally Harmonized System (GHS).
Hazard pictograms

GHS02  GHS05  GHS07

Signal word Danger

Hazard-determining components of labelling:
ethyl lactate

Hazard statements
H226 Flammable liquid and vapor.
H318 Causes serious eye damage.
H335 May cause respiratory irritation.

Precautionary statements
P101 If medical advice is needed, have product container or label at hand.
P102 Keep out of reach of children.
P103 Read label before use.
P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER or doctor/physician.
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Classification system:

NFPA ratings (scale 0 - 4)

Health = 2
Fire = 2
Reactivity = 0

HMIS-ratings (scale 0 - 4)

Health = 2
Fire = 2
Reactivity = 0

First aid measures

After inhalation:
Supply fresh air or oxygen; call for doctor.
In case of unconsciousness place patient stably in side position for transportation.

After skin contact:
Immediately wash with water and soap and rinse thoroughly.
If skin irritation continues, consult a doctor.

After eye contact: Rinse opened eye for several minutes under running water and then consult a doctor.

After swallowing: Seek medical treatment.
5 Firefighting measures

- Suitable extinguishing agents: CO2, sand, extinguishing powder. Do not use water.
- For safety reasons unsuitable extinguishing agents: Water with full jet
- Special hazards arising from the substance or mixture: No further relevant information available.
- Protective equipment: Wear SCBA.

6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures
  Wear protective equipment. Keep unprotected persons away.
- Environmental precautions: Do not allow to enter sewers/surface or ground water.
- Methods and material for containment and cleaning up:
  Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
  Ensure adequate ventilation.
  Do not flush with water or aqueous cleansing agents
- Reference to other sections
  See Section 7 for information on safe handling.
  See Section 8 for information on personal protection equipment.
  See Section 13 for disposal information.

7 Handling and storage

- Handling:
  - Precautions for safe handling
    Ensure good ventilation/exhaust at the workplace.
    Prevent formation of aerosols.
  - Information about protection against explosions and fires:
    Keep ignition sources away - Do not smoke.
    Protect against electrostatic charges.
- Storage:
  - Requirements to be met by storerooms and containers: No special requirements.
  - Information about storage in one common storage facility: Not required.
  - Further information about storage conditions: Keep container tightly sealed.
  - Specific end use(s): No further relevant information available.

8 Exposure controls/personal protection

- Additional information about design of technical systems: No further data; see item 7.
- Components with limit values that require monitoring at the workplace:
  The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
- Additional information: The lists that were valid during the creation were used as basis.
- Personal protective equipment:
- General protective and hygienic measures:
  Keep away from food and beverages.
  Immediately remove all soiled and contaminated clothing.
  Wash hands before breaks and at the end of work.
  Avoid contact with the eyes.
- Respiratory equipment:
  In case of low exposure, use cartridge respirator. In case of intensive or longer exposure, use SCBA.
Protection of hands:

- **Protective gloves**

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation.

- **Material of gloves**: Rubber gloves
- **Penetration time of glove material**: Contact glove manufacture for break-through time.

Eye protection:

- **Tightly sealed goggles**

### 9 Physical and chemical properties

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General Information</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Appearance</strong></td>
<td></td>
</tr>
<tr>
<td>Form: Fluid</td>
<td></td>
</tr>
<tr>
<td>Color: Clear</td>
<td></td>
</tr>
<tr>
<td>Odor: Mild</td>
<td></td>
</tr>
<tr>
<td>Odour threshold: Not determined.</td>
<td></td>
</tr>
<tr>
<td><strong>pH-value</strong>: Not determined.</td>
<td></td>
</tr>
<tr>
<td><strong>Change in condition</strong></td>
<td></td>
</tr>
<tr>
<td>Melting point/Melting range: Undetermined.</td>
<td></td>
</tr>
<tr>
<td>Boiling point/Boiling range: 154°C (309 °F)</td>
<td></td>
</tr>
<tr>
<td><strong>Flash point</strong>: 55°C (131 °F)</td>
<td></td>
</tr>
<tr>
<td><strong>Flammability (solid, gaseous)</strong>: Not applicable.</td>
<td></td>
</tr>
<tr>
<td><strong>Ignition temperature</strong>: 400°C (752 °F)</td>
<td></td>
</tr>
<tr>
<td><strong>Decomposition temperature</strong>: Not determined.</td>
<td></td>
</tr>
<tr>
<td><strong>Auto igniting</strong>: Product is not selfigniting.</td>
<td></td>
</tr>
<tr>
<td><strong>Danger of explosion</strong>: Not determined.</td>
<td></td>
</tr>
<tr>
<td><strong>Explosion limits</strong></td>
<td></td>
</tr>
<tr>
<td>Lower: 1.0 Vol %</td>
<td></td>
</tr>
<tr>
<td>Upper: 17.0 Vol %</td>
<td></td>
</tr>
<tr>
<td><strong>Vapor pressure at 20°C (68 °F)</strong>: 2 hPa (2 mm Hg)</td>
<td></td>
</tr>
<tr>
<td><strong>Density</strong>: Not determined.</td>
<td></td>
</tr>
<tr>
<td><strong>Relative density</strong>: Not determined.</td>
<td></td>
</tr>
<tr>
<td><strong>Vapour density</strong>: Not determined.</td>
<td></td>
</tr>
<tr>
<td><strong>Evaporation rate</strong>: Not determined.</td>
<td></td>
</tr>
<tr>
<td><strong>Solubility in / Miscibility with Water</strong>: Not miscible or difficult to mix.</td>
<td></td>
</tr>
<tr>
<td><strong>Segregation coefficient (n-octanol/water)</strong>: Not determined.</td>
<td></td>
</tr>
</tbody>
</table>

(Contd. on page 5)
Trade name: MMA(8.5)MAA Copolymer Series Resists

· Viscosity:
  · Dynamic: Not determined.
  · Kinematic: Not determined.
· Other information: No further relevant information available.

10 Stability and reactivity

· Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
· Incompatible materials: No further relevant information available.
· Hazardous decomposition products: No dangerous decomposition products known.

11 Toxicological information

· Acute toxicity:
  · Primary irritant effect:
    · on the skin: No irritant effect.
    · on the eye: Strong irritant with the danger of severe eye injury.
  · Sensitization: No sensitizing effects known.

12 Ecological information

· Aquatic toxicity: No further relevant information available.
· Persistence and degradability: No further relevant information available.
· Behavior in environmental systems:
· Bioaccumulative potential: No further relevant information available.
· Additional ecological information:
· General notes:
  Water hazard class 1 (Self-assessment): slightly hazardous for water
  Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

13 Disposal considerations

· Waste treatment methods
  · Recommendation:
    Must not be disposed of as regular garbage/trash. Do not allow product to reach sewage system.
· Uncleaned packagings:
  · Recommendation: Disposal must be made in accordance with Federal, State, and Local regulations.

14 Transport information

· UN-Number
  · DOT: NA1866
  · ADR, IMDG, IATA: UN1866
· UN proper shipping name
  · DOT, IMDG, IATA: RESIN SOLUTION
### 34.1.12 ADR, IMDG, IATA

<table>
<thead>
<tr>
<th>Class</th>
<th>3 Flammable liquids.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Label</td>
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### 34.1.13 ADR, IMDG, IATA

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<tr>
<th>Class</th>
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<tbody>
<tr>
<td>Label</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Packing group

DOT, ADR, IMDG, IATA: III

#### Environmental hazards:

Marine pollutant: No

#### Special precautions for user

Danger code (Kemler): 30
EMS Number: F-E, S-E

#### Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable.

#### UN "Model Regulation"

UN1866, RESIN SOLUTION, 3, III

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### 15 Regulatory information

#### Sara

- **Section 355 (extremely hazardous substances):** None of the ingredients is listed.

- **Section 313 (Specific toxic chemical listings):** None of the ingredients is listed.

#### TSCA (Toxic Substances Control Act):

All ingredients are listed or comply with TSCA regulations.

#### Proposition 65

- **Chemicals known to cause cancer:** None of the ingredients are listed.

- **Chemicals known to cause reproductive toxicity for females:** None of the ingredients is listed.

- **Chemicals known to cause reproductive toxicity for males:** None of the ingredients is listed.

(Contd. on page 7)
· Chemicals known to cause developmental toxicity:
  None of the ingredients is listed.

· Carcinogenic categories
  · EPA (Environmental Protection Agency)
    None of the ingredients is listed.
  · IARC (International Agency for Research on Cancer)
    None of the ingredients is listed.
  · NTP (National Toxicology Program)
    None of the ingredients is listed.
  · TLV (Threshold Limit Value established by ACGIH)
    None of the ingredients is listed.
  · NIOSH-Ca (National Institute for Occupational Safety and Health)
    None of the ingredients is listed.
  · OSHA-Ca (Occupational Safety & Health Administration)
    None of the ingredients is listed.

· GHS label elements The product is classified and labelled according to the Globally Harmonized System (GHS).

· Hazard pictograms

  GHS02  GHS05  GHS07

· Signal word Danger

· Hazard-determining components of labelling:
  ethyl lactate

· Hazard statements
  H226 Flammable liquid and vapor.
  H318 Causes serious eye damage.
  H335 May cause respiratory irritation.

· Precautionary statements
  P101 If medical advice is needed, have product container or label at hand.
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  P310 Immediately call a POISON CENTER or doctor/physician.
  P405 Store locked up.
  P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· Department issuing MSDS: Product safety department
Trade name: MMA(8.5)MAA Copolymer Series Resists

- **Contact:** Mr. Bedet
- **Abbreviations and acronyms:**
  - RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
  - ICAO: International Civil Aviation Organization
  - ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
  - IMDG: International Maritime Code for Dangerous Goods
  - DOT: US Department of Transportation
  - IATA: International Air Transport Association
  - ACGIH: American Conference of Governmental Industrial Hygienists
  - NFPA: National Fire Protection Association (USA)
  - HMIS: Hazardous Materials Identification System (USA)