1 Identification of the substance/mixture and of the company

- Product identifier
  - Trade name: 950 PMMA Series Resists in Anisole

- Product number:
  - M230001, M230002, M230003, M230004, M230504, M230005, M230505, M230006, M230007, M230008, M230009, M230010, M230011, M230012, M230013, M230015

- Application of the substance / the mixture
  - Photoresist

- Details of the supplier of the safety data sheet
  - Manufacturer/Supplier:
    MicroChem Corp.
    200 Flanders Road
    Westborough, MA 01581 USA

- Information department:
  - Product Safety

- Emergency telephone number:
  - MicroChem Corp : 617-965-5511
  - Chemtrec USA Emergency : 800-424-9300
  - Chemtrec International Emergency : 703-527-3887

2 Hazard(s) identification

- Classification of the substance or mixture
  - GHS02 Flame
  - Flam. Liq. 3 H226 Flammable liquid and vapor.

- GHS07
  - Acute Tox. 4 H332 Harmful if inhaled.
  - Skin irrit. 2 H315 Causes skin irritation.
  - Eye irrit. 2A H319 Causes serious eye irritation.
  - STOT SE 3 H335 May cause respiratory irritation.

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

- Signal word Warning
  - Hazard-determining components of labeling:
    - Anisole
  - Hazard statements
    - H226 Flammable liquid and vapor.
    - H332 Harmful if inhaled.
    - H315 Causes skin irritation.
Safety Data Sheet  
acc. to OSHA HCS

Trade name: 950 PMMA Series Resists in Anisole

H319 Causes serious eye irritation.  
H335 May cause respiratory irritation.  

**Precautionary statements**

- **P210** Keep away from heat/sparks/open flames/hot surfaces. No smoking.
- **P260** Do not breathe dust/fume/gas/mist/vapours/spray.
- **P280** Wear protective gloves/protective clothing/eye protection/face protection.
- **P273** Avoid release to the environment.
- **P301+P310** IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
- **P305+P351+P338** IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- **P304+P340** IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- **P332+P313** If skin irritation occurs: Get medical advice/attention.
- **P337+P313** If eye irritation persists: Get medical advice/attention.
- **P370+P378** In case of fire: Use for extinction: Alcohol resistant foam.
- **P370+P378** In case of fire: Use for extinction: Fire-extinguishing powder.
- **P370+P378** In case of fire: Use for extinction: Carbon dioxide.
- **P302+P352** IF ON SKIN: Wash with plenty of soap and water.
- **P403+P233** Store in a well-ventilated place. Keep container tightly closed.
- **P501** Dispose of contents/container in accordance with local/regional/national/international regulations.

**Classification system:**  
**NFPA ratings (scale 0 - 4)**

- Health = 1  
- Fire = 2  
- Reactivity = 0

**HMIS-ratings (scale 0 - 4)**

- **HEALTH** 1  
- **FIRE** 2  
- **REACTIVITY** 0

**Other hazards**

- **Results of PBT and vPvB assessment**
  - **PBT**: Not applicable.  
  - **vPvB**: Not applicable.

### 3 Composition/information on ingredients

**Chemical characterization: Mixtures**  
**Description**: Mixture of the substances listed below with nonhazardous additions.

<table>
<thead>
<tr>
<th>Dangerous components:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>100-66-3 Anisole</strong></td>
<td>80-100%</td>
</tr>
<tr>
<td>(Flam. Liq. 3, H226; Acute Tox. 4, H332; Skin Irrit. 2, H315; Eye Irrit. 2A, H319; STOT SE 3, H335)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Additional Components:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>9011-14-7 Poly(methyl methacrylate)</strong></td>
<td>1-20%</td>
</tr>
</tbody>
</table>
4 First-aid measures

- **Description of first aid measures**
  - **After inhalation:**
    Inhalation is not an expected route of exposure. If respiratory irritation or distress occurs remove victim to fresh air. Seek medical attention if respiratory irritation or distress continues.
  - **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
  - **After eye contact:**
    Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
  - **After swallowing:**
    Do not induce vomiting unless instructed to do so by a physician. Wash out mouth with water and keep person at rest. Seek immediate medical attention.
- **Information for doctor:**
- **Most important symptoms and effects, both acute and delayed**
  No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed**
  No further relevant information available.

5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:**
  - Alcohol resistant foam
  - Foam
  - Carbon dioxide
- **For safety reasons unsuitable extinguishing agents:**
  - Water with full jet
- **Special hazards arising from the substance or mixture**
  Containers may explode due to pressure increase when container is exposed to extreme heat. Vapors may travel a considerable distance to a source of ignition and flash back along vapor trail.
- **Advice for firefighters**
- **Protective equipment:** Wear SCBA.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
  - Keep away from ignition sources
  - Ensure adequate ventilation
  - 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
    Use only under yellow light
    Keep receptacles tightly sealed.
    Use only in well ventilated areas.
    Ensure good ventilation/exhaust at the workplace.
    Prevent formation of aerosols.

- Information about protection against explosions and fires:
  - Use explosion-proof apparatus / fittings and spark-proof tools.
  - Keep ignition sources away - Do not smoke.
  - Protect against electrostatic charges.

- Conditions for safe storage, including any incompatibilities

- Storage:
  - Requirements to be met by storerooms and containers:
    Store in inert atmosphere or keep well sealed to prevent the formation of peroxides and other oxidation products.

- Information about storage in one common storage facility: Not required.

- Further information about storage conditions:
  - Protect from exposure to the light.
  - Store in a cool place. Heat will increase pressure and may lead to the receptacle bursting.
  - Keep container tightly sealed.

- Specific end use(s) Preparation of radiation sensitive layers in fabrication of microelectronic devices

8 Exposure controls/personal protection

- Additional information about design of technical systems: No further data; see item 7.

- Control parameters

- 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.

- Exposure controls

- 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 and skin.
  - Respiratory equipment:
    In case of low exposure, use cartridge respirator. In case of intensive or longer exposure, use SCBA.

- Protection of hands:

  [Image of a glove]

  Protective gloves

  The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
  Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
  Contact glove manufacturerer for break-through time.

(Contd. on page 5)
### 9 Physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Information on basic physical and chemical properties</strong></td>
<td></td>
</tr>
<tr>
<td><strong>General Information</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Appearance:</strong></td>
<td></td>
</tr>
<tr>
<td>Form:</td>
<td>Liquid</td>
</tr>
<tr>
<td>Color:</td>
<td>Clear to light yellow</td>
</tr>
<tr>
<td>Odor:</td>
<td>Strong</td>
</tr>
<tr>
<td>Odour threshold:</td>
<td>Not determined</td>
</tr>
<tr>
<td><strong>pH-value:</strong></td>
<td>Not determined</td>
</tr>
<tr>
<td><strong>Change in condition</strong></td>
<td></td>
</tr>
<tr>
<td>Melting point/Melting range:</td>
<td>Undetermined.</td>
</tr>
<tr>
<td>Boiling point/Boiling range:</td>
<td>184 °C (363 °F)</td>
</tr>
<tr>
<td><strong>Flash point:</strong></td>
<td>43 °C (109 °F)</td>
</tr>
<tr>
<td><strong>Flammability (solid, gaseous):</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Ignition temperature:</strong></td>
<td>475 °C (887 °F)</td>
</tr>
<tr>
<td><strong>Decomposition temperature:</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Auto igniting:</strong></td>
<td>Product is not self-igniting.</td>
</tr>
<tr>
<td><strong>Danger of explosion:</strong></td>
<td>Product is not explosive. However, formation of explosive air/vapor mixtures are possible.</td>
</tr>
<tr>
<td><strong>Explosion limits:</strong></td>
<td></td>
</tr>
<tr>
<td>Lower:</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Upper:</td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Vapor pressure at 20 °C (68 °F):</strong></td>
<td>0.4 hPa</td>
</tr>
<tr>
<td><strong>Density:</strong></td>
<td></td>
</tr>
<tr>
<td>Relative density:</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Vapour density:</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Evaporation rate:</td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Solubility in / Miscibility with</strong></td>
<td></td>
</tr>
<tr>
<td>Water:</td>
<td>Water miscible No</td>
</tr>
<tr>
<td><strong>Partition coefficient (n-octanol/water):</strong></td>
<td>Not determined.</td>
</tr>
</tbody>
</table>
10 Stability and reactivity

- Reactivity
  - Chemical stability: Stable under normal use conditions
  - Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
  - Possibility of hazardous reactions: No dangerous reactions known.
  - Conditions to avoid: No further relevant information available.
  - Incompatible materials: Strong Oxidizing Agents, Strong Acids, Strong Bases
  - Hazardous decomposition products:
    - Carbon monoxide and carbon dioxide
    - Phenol
    - methyl methacrylate

11 Toxicological information

- Information on toxicological effects
- Acute toxicity:
  - LD/LC50 values that are relevant for classification:
    100-66-3 Anisole
    | 100-66-3 Anisole |  |
    | Oral | LD50 | 3700 mg/kg (Rat) |
    | Dermal | LD50 | >3000 mg/kg (rabbit) |
- Primary irritant effect:
  - on the skin: Irritant to skin and mucous membranes.
  - on the eye: Irritating effect.
Trade name: 950 PMMA Series Resists in Anisole

- Sensitization: No sensitizing effects known.
- Experience with humans: No further relevant information available.
- Additional toxicological information:
  The product shows the following dangers according to internally approved calculation methods for preparations:
  Irritant
- Carcinogenic categories
  - IARC (International Agency for Research on Cancer)
    9011-14-7 Poly(methyl methacrylate)
  - NTP (National Toxicology Program)
    None of the ingredients are listed.

12 Ecological information

- Toxicity
  - Aquatic toxicity:
    100-66-3 Anisole
    EC50/24 h 40 mg/l (daphnia magna)
    EC50/96 hr 162 mg/l (green algae)
    LC50/48 hr 120 mg/l (Cyprinus carpio (common carp))
  - Persistence and degradability Moderately partly biodegradable
  - Behavior in environmental systems:
  - Bioaccumulative potential No further relevant information available.
  - Mobility in soil No further relevant information available.
  - Additional ecological information:
  - General notes:
    Water hazard class 2 (Self-assessment): hazardous for water
    Do not allow product to reach ground water, water course or sewage system.
    Danger to drinking water if even small quantities leach into the ground.
  - Results of PBT and vPvB assessment
  - PBT: Not applicable.
  - vPvB: Not applicable.
  - Other adverse effects No further relevant information available.

13 Disposal considerations

- Waste treatment methods
- Recommendation:
  Disposal must be made in accordance with Federal, State, and Local regulations.
  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, ADR, IMDG, IATA UN1866
### Trade name: 950 PMMA Series Resists in Anisole

<table>
<thead>
<tr>
<th>UN proper shipping name</th>
<th>Resin solution, mixture</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOT, ADR</td>
<td>RESIN SOLUTION, mixture</td>
</tr>
<tr>
<td>IMDG, IATA</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transport hazard class(es)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOT</td>
</tr>
<tr>
<td>Class</td>
</tr>
<tr>
<td>Label</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ADR, IMDG, IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
</tr>
<tr>
<td>Label</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Packing group</th>
<th>DOT, ADR, IMDG, IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>III</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental hazards:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marine pollutant:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Special precautions for user</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger code (Kenmer):</td>
</tr>
<tr>
<td>EMS Number:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not applicable.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UN &quot;Model Regulation&quot;:</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN1866, Resin solution, mixture, 3, III</td>
</tr>
</tbody>
</table>

### 15 Regulatory information

<table>
<thead>
<tr>
<th>Safety, health and environmental regulations/legislation specific for the substance or mixture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sara</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section 355 (extremely hazardous substances):</th>
</tr>
</thead>
<tbody>
<tr>
<td>None of the ingredients are listed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section 313 (Specific toxic chemical listings):</th>
</tr>
</thead>
<tbody>
<tr>
<td>None of the ingredients is listed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TSCA (Toxic Substances Control Act):</th>
</tr>
</thead>
<tbody>
<tr>
<td>All ingredients are listed or comply with TSCA regulations.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Proposition 65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemicals known to cause cancer:</td>
</tr>
<tr>
<td>None of the ingredients are listed.</td>
</tr>
</tbody>
</table>
Safety Data Sheet
acc. to OSHA HCS

Trade name: 950 PMMA Series Resists in Anisole

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

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

- Chemicals known to cause developmental toxicity:
  None of the ingredients are listed.

- Carcinogenic categories
  - EPA (Environmental Protection Agency)
    None of the ingredients are listed.
  - TLV (Threshold Limit Value established by ACGIH)
    None of the ingredients are listed.
  - NIOSH-Ca (National Institute for Occupational Safety and Health)
    None of the ingredients are listed.
  - OSHA-Ca (Occupational Safety & Health Administration)
    None of the ingredients are listed.

- New Jersey State Right To Know List
  100-66-3 Anisole

- California SCAQMD Rule 443.1 VOC’s: See Table 1 - Section 9
- GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS).
- Hazard pictograms
  - GHS02
  - GHS07

- Signal word Warning

- Hazard-determining components of labeling:
  Anisole

- Hazard statements
  H226 Flammable liquid and vapor.
  H332 Harmful if inhaled.
  H315 Causes skin irritation.
  H319 Causes serious eye irritation.
  H335 May cause respiratory irritation.

- Precautionary statements
  P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
  P260 Do not breathe dust/fume/gas/mist/vapours/spray.
  P280 Wear protective gloves/protective clothing/eye protection/face protection.
  P273 Avoid release to the environment.
  P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
  P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
  P332+P313 If skin irritation occurs: Get medical advice/attention.
  P337+P313 If eye irritation persists: Get medical advice/attention.
  P370+P378 In case of fire: Use for extinction: Alcohol resistant foam.

(Contd. on page 10)
Trade name: 950 PMMA Series Resists in Anisole

P370+P378 In case of fire: Use for extinction. Fire-extinguishing powder.
P370+P378 In case of fire: Use for extinction. Carbon dioxide.
P302+P352 IF ON SKIN: Wash with plenty of soap and water.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

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
- Contact: Mr. Cole

Revision History:
The business address of the manufacturer in Section 1 was updated. The hazard classification and precautionary statements for the mixture in Section 2 were revised. The toxicology data in Sections 11 and 12 were revised.

Date of preparation / last revision 10/10/2014 / 1

Abbreviations and acronyms:
BID: 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
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
VOC: Volatile Organic Compounds (USA, EU)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent