1 Identification of the substance/mixture and of the company

- **Product identifier**
  - **Trade name:** 950 PMMA Series Resists in Chlorobenzene
  - **Product number:**
    - 950C1, 950C2, 950C3, 950C4, 950C4.5, 950C5, 950C6, 950C6.5, 950C7, 950C7.5, 950C8, 950C9, 950C10, 950C11, 950C12, 950C15
  - **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
    - Chempac USA Emergency: 800-424-9300
    - Chempac 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:**
  - 108-90-7 Chlorobenzene
    - H226: Flammable liquid and vapor.
    - H411: Toxic to aquatic life with long lasting effects.
    - H332: Harmful if inhaled.

- **Additional Components:**
  - 9011-14-7 Poly(methylmethacrylate)
    - 1-15%

3 Hazards identification

- **Classification of the substance or mixture**
  - **GHS02 Flame**
    - H226: Flammable liquid and vapor.
  - **GHS09 Environment**
    - H411: Toxic to aquatic life with long lasting effects.
  - **GHS07**
    - H332: Harmful if inhaled.
    - H303: May be harmful if swallowed.

- **Label elements**
  - **GHS label elements** The product is classified and labelled according to the Globally Harmonized System (GHS).
Trade name: 950 PMMA Series Resists in Chlorobenzene

- **Hazard pictograms**

![Hazard pictograms](image)

- **Signal word** Warning

- **Hazard-determining components of labelling:**
  - chlorobenzene

- **Hazard statements**
  - H226 Flammable liquid and vapor.
  - H303 May be harmful if swallowed.
  - H332 Harmful if inhaled.
  - H411 Toxic to aquatic life with long lasting effects.

- **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.
  - P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
  - P241 Use explosion-proof electrical/ventilating/lighting/equipment.
  - P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
  - P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
  - P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

- **Classification system:**
  - **NFPA ratings (scale 0 - 4)**
    - Health = 2
    - Fire = 3
    - Reactivity = 0
  - **HMIS-ratings (scale 0 - 4)**
    - Health = 2
    - Fire = 3
    - Reactivity = 0

**4 First aid measures**

- **General information:**
  Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

- **After inhalation:**
  - Supply fresh air.
  - Seek medical treatment.

- **After skin contact:**
  Immediately wash with water and soap and rinse thoroughly.

- **After eye contact:**
  - Rinse opened eye for several minutes under running water.

- **After swallowing:**
  Do not induce vomiting; immediately call for medical help.
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:
  Inform respective authorities in case of seepage into water course or sewage system.
· Methods and material for containment and cleaning up:
  Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
  Dispose contaminated material as waste according to item 13.
  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.
    Protect from exposure to the light.
· 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:

<table>
<thead>
<tr>
<th>Substance</th>
<th>PEL</th>
<th>TLV</th>
</tr>
</thead>
<tbody>
<tr>
<td>108-90-7 chlorobenzene</td>
<td>350 mg/m³, 75 ppm</td>
<td>46 mg/m³, 10 ppm</td>
</tr>
</tbody>
</table>

· Additional information: The lists that were valid during the creation were used as basis.
Trade name: 950 PMMA Series Resists in Chlorobenzene

- Personal protective equipment:
- General protective and hygienic measures:
  Keep away from food and beverages.
  Wash hands before breaks and at the end of work.
- Respiratory equipment:
  In case of low exposure, use cartridge respirator. In case of intensive or longer exposure, use SCBA.
- Protection of hands:
  Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
- Material of gloves PVA 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>· General Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>· Appearance:</td>
</tr>
<tr>
<td>Form:</td>
</tr>
<tr>
<td>Color:</td>
</tr>
<tr>
<td>· Odor:</td>
</tr>
<tr>
<td>· Odour threshold:</td>
</tr>
<tr>
<td>· pH-value:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>· Change in condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>· Melting point/Melting range:</td>
</tr>
<tr>
<td>· Boiling point/Boiling range:</td>
</tr>
</tbody>
</table>

| · Flash point: | 28°C (82 °F) |
| · Flammability (solid, gaseous): | Not applicable. |
| · Ignition temperature: | 590°C (1094 °F) |
| · Decomposition temperature: | Not determined. |
| · Auto igniting: | Product is not selfigniting. |
| · Danger of explosion: | Product is not explosive. However, formation of explosive air/vapor mixtures are possible. |

<table>
<thead>
<tr>
<th>· Explosion limits:</th>
</tr>
</thead>
<tbody>
<tr>
<td>· Lower:</td>
</tr>
<tr>
<td>· Upper:</td>
</tr>
</tbody>
</table>

| · Vapor pressure at 20°C (68 °F): | 12 hPa (9 mm Hg) |
| · Density: | Not determined. |
| · Relative density: | Not determined. |
| · Vapour density: | Not determined. |
| · Evaporation rate: | Not determined. |
| · Solubility in / Miscibility with Water: | Not miscible or difficult to mix. |
### Trade name: 950 PMMA Series Resists in Chlorobenzene

<table>
<thead>
<tr>
<th>Name</th>
<th>Number</th>
<th>Sp.Grav.</th>
<th>Vol.(%by wt.)</th>
<th>VOC (g/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>950C1</td>
<td>M240001</td>
<td>1.106</td>
<td>99</td>
<td>1095</td>
</tr>
<tr>
<td>950C2</td>
<td>M240002</td>
<td>1.107</td>
<td>98</td>
<td>1085</td>
</tr>
<tr>
<td>950C3</td>
<td>M240003</td>
<td>1.108</td>
<td>97</td>
<td>1075</td>
</tr>
<tr>
<td>950C4</td>
<td>M240004</td>
<td>1.109</td>
<td>96</td>
<td>1065</td>
</tr>
<tr>
<td>950C4.5</td>
<td>M240504</td>
<td>1.109</td>
<td>95.5</td>
<td>1060</td>
</tr>
<tr>
<td>950C5</td>
<td>M240005</td>
<td>1.110</td>
<td>95</td>
<td>1055</td>
</tr>
<tr>
<td>950C6</td>
<td>M240006</td>
<td>1.111</td>
<td>94</td>
<td>1045</td>
</tr>
<tr>
<td>950C6.5</td>
<td>M240506</td>
<td>1.112</td>
<td>93.5</td>
<td>1040</td>
</tr>
<tr>
<td>950C7</td>
<td>M240007</td>
<td>1.113</td>
<td>93</td>
<td>1035</td>
</tr>
<tr>
<td>950C7.5</td>
<td>M240507</td>
<td>1.113</td>
<td>92.5</td>
<td>1030</td>
</tr>
<tr>
<td>950C8</td>
<td>M240008</td>
<td>1.114</td>
<td>92</td>
<td>1025</td>
</tr>
<tr>
<td>950C9</td>
<td>M240009</td>
<td>1.115</td>
<td>91</td>
<td>1015</td>
</tr>
<tr>
<td>950C10</td>
<td>M240010</td>
<td>1.115</td>
<td>90</td>
<td>1005</td>
</tr>
<tr>
<td>950C11</td>
<td>M240011</td>
<td>1.116</td>
<td>89</td>
<td>995</td>
</tr>
<tr>
<td>950C12</td>
<td>M240012</td>
<td>1.117</td>
<td>88</td>
<td>985</td>
</tr>
<tr>
<td>950C15</td>
<td>M240015</td>
<td>1.120</td>
<td>85</td>
<td>950</td>
</tr>
</tbody>
</table>

### 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:**
  - **LD/LC50 values that are relevant for classification:**
    - 108-90-7 chlorobenzene
    - Oral LD50 2290 mg/kg (rat)
  - **Primary irritant effect:**
    - **on the skin:** No irritant effect.
    - **on the eye:** No irritating effect.
    - **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.
- **Ecotoxicological effects:**
- **Remark:** Toxic for fish
34.1.12

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 leak into the ground.
Also poisonous for fish and plankton in water bodies.
Toxic for aquatic organisms

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, ADR, IMDG, IATA UN1866

UN proper shipping name

DOT, IMDG, IATA RESIN SOLUTION, mixture

ADR 1866 RESIN SOLUTION, mixture, ENVIRONMENTALLY HAZARDOUS

Transport hazard class(es)

DOT

Class 3 Flammable liquids.

Label 3

ADR, IMDG, IATA

Class 3 Flammable liquids

Label 3

Packing group

DOT, ADR, IMDG, IATA III

Environmental hazards:

Product contains environmentally hazardous substances: chlorobenzene

Marine pollutant:

Yes

Special precautions for user

Warning: Flammable liquids

Danger code (Kemler):

30
Trade name: 950 PMMA Series Resists in Chlorobenzene

- **EMS Number:** F-E,S-D
- **Segregation groups:** Liquid halogenated hydrocarbons
- **Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:** Not applicable.
- **UN "Model Regulation":** UN1866, RESIN SOLUTION, mixture, ENVIRONMENTALLY HAZARDOUS, 3, III

### 15 Regulatory information

- **Sara**
  - **Section 355 (extremely hazardous substances):** None of the ingredients is listed.
  - **Section 313 (Specific toxic chemical listings):**
    - 108-90-7 chlorobenzene
  - **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.
  - **Chemicals known to cause developmental toxicity:** None of the ingredients is listed.

- **Carcinogenic categories**
  - **EPA (Environmental Protection Agency)**
    - 108-90-7 chlorobenzene D
  - **IARC (International Agency for Research on Cancer)**
    - 9011-14-7 Poly(methylmethacrylate) 3
  - **NTP (National Toxicology Program)**
    - None of the ingredients is listed.
  - **TLV (Threshold Limit Value established by ACGIH)**
    - 108-90-7 chlorobenzene A3
  - **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).
Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date 04/19/2012
Reviewed on 04/19/2012

Trade name: 950 PMMA Series Resists in Chlorobenzene

· Hazard pictograms

GHS02  GHS07  GHS09

· Signal word Warning

· Hazard-determining components of labelling:
chlorobenzene

· Hazard statements
H226 Flammable liquid and vapor.
H303 May be harmful if swallowed.
H332 Harmful if inhaled.
H411 Toxic to aquatic life with long lasting effects.

· 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.
P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P241 Use explosion-proof electrical/ventilating/lighting/equipment.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
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
· 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)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent

USA