1 Identification of the substance/mixture and of the company

· **Product identifier**
  · Trade name: LOR B Series Resists

· **Product number:**
  G316702, G316703, G316704, G316707, G316708, G316709, G316710, G316711, G316712, G316715, G316716, G316719

· **Application of the substance / the preparation** Photoresist

· **Details of the supplier of the safety data sheet**
  · **Manufacturer/Supplier:**
    MicroChem Corp.
    90 Oak Street
    P.O. Box 426
    Newton, MA 02464-0002 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 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>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>120-92-3 cyclopentanone</td>
<td>🚔 H226;</td>
<td>🟢 H315; H319 65-90%</td>
</tr>
<tr>
<td>107-98-2 1-methoxy-2-propanol</td>
<td>🚔 H226;</td>
<td>🟢 H336 10-15%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Additional Components:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>102322-80-5 Polyaliphatic imide copolymer</td>
<td>H303; H313</td>
<td>1-20%</td>
</tr>
<tr>
<td>proprietary dye</td>
<td></td>
<td>0.1-2%</td>
</tr>
</tbody>
</table>

3 Hazards identification

· **Classification of the substance or mixture**
  · 🚔 GHS02 Flame
  · 🟢 H226 Flammable liquid and vapor.
  · 🟢 H315 Causes skin irritation.
  · 🟢 H319 Causes serious eye irritation.

· **Label elements**
  · **GHS label elements** The product is classified and labelled according to the Globally Harmonized System (GHS). (Contd. on page 2)
Trade name: LOR B Series Resists

- **Hazard pictograms**
  - GHS02
  - GHS07

- **Signal word** Warning
- **Hazard statements**
  - H226 Flammable liquid and vapor.
  - H315 Causes skin irritation.
  - H319 Causes serious eye 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.
  - **P210** Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
  - **P241** Use explosion-proof electrical/ventilating/lighting/equipment.
  - **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.
  - **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

- **After inhalation:** Supply fresh air or oxygen; call for doctor.
- **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
- **After eye contact:** Rinse opened eye for several minutes under running water and then consult a doctor.
- **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**: 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.
  - **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>REL</th>
<th>Short-term value: 540 mg/m³, 150 ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long-term</td>
<td>360 mg/m³, 100 ppm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>107-98-2 1-methoxy-2-propanol</th>
</tr>
</thead>
<tbody>
<tr>
<td>REL Short-term value: 553 mg/m³, 150 ppm</td>
</tr>
<tr>
<td>Long-term value: 369 mg/m³, 100 ppm</td>
</tr>
</tbody>
</table>

- **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 and skin.
- **Respiratory equipment**:
  In case of low exposure, use cartridge respirator. In case of intensive or longer exposure, use SCBA.
### 9 Physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</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:</td>
<td>Fluid</td>
</tr>
<tr>
<td>Color:</td>
<td>Various colors</td>
</tr>
<tr>
<td></td>
<td>Clear</td>
</tr>
<tr>
<td></td>
<td>Light yellow</td>
</tr>
<tr>
<td></td>
<td>Brown</td>
</tr>
<tr>
<td><strong>Odor:</strong></td>
<td></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>120°C (248 °F)</td>
</tr>
<tr>
<td><strong>Flash point:</strong></td>
<td>30°C (86 °F)</td>
</tr>
<tr>
<td><strong>Flammability (solid, gaseous):</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Ignition temperature:</strong></td>
<td>270°C (518 °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 selfigniting.</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>2.3 Vol %</td>
</tr>
<tr>
<td>Upper:</td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Vapor pressure at 20°C (68 °F):</strong></td>
<td>12 hPa (9 mm Hg)</td>
</tr>
<tr>
<td><strong>Density:</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Relative density</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Vapour density</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Evaporation rate</strong></td>
<td>Not determined.</td>
</tr>
</tbody>
</table>
Trade name: LOR B Series Resists

- **Solubility in / Miscibility with Water:** Not miscible or difficult to mix.
- **Segregation coefficient (n-octonol/water):** Not determined.
- **Viscosity:**
  - Dynamic: Not determined.
  - Kinematic: Not determined.
- **Other information**

<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>LOR 0.7B</td>
<td>G316702</td>
<td>0.965</td>
<td>98</td>
<td>40</td>
</tr>
<tr>
<td>LOR 1B</td>
<td>G316703</td>
<td>0.967</td>
<td>96</td>
<td>930</td>
</tr>
<tr>
<td>LOR 2B</td>
<td>G316704</td>
<td>0.973</td>
<td>95</td>
<td>930</td>
</tr>
<tr>
<td>LOR 3B</td>
<td>G316707</td>
<td>0.980</td>
<td>93</td>
<td>920</td>
</tr>
<tr>
<td>LOR 5B</td>
<td>G316708</td>
<td>0.982</td>
<td>92</td>
<td>910</td>
</tr>
<tr>
<td>LOR 6B</td>
<td>G316709</td>
<td>0.984</td>
<td>91</td>
<td>900</td>
</tr>
<tr>
<td>LOR 7B</td>
<td>G316710</td>
<td>0.988</td>
<td>91</td>
<td>900</td>
</tr>
<tr>
<td>LOR 10B</td>
<td>G316711</td>
<td>0.990</td>
<td>89</td>
<td>880</td>
</tr>
<tr>
<td>LOR 15B</td>
<td>G316712</td>
<td>0.992</td>
<td>88</td>
<td>870</td>
</tr>
<tr>
<td>LOR 20B</td>
<td>G316715</td>
<td>1.002</td>
<td>86</td>
<td>860</td>
</tr>
<tr>
<td>LOR 30B</td>
<td>G316716</td>
<td>1.004</td>
<td>85</td>
<td>850</td>
</tr>
<tr>
<td>LOR 50B</td>
<td>G316719</td>
<td>1.007</td>
<td>82</td>
<td>830</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:**
  - **Primary irritant effect:**
    - on the skin: Irritant to skin and mucous membranes.
    - on the eye: 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.
- **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**: UN1866
- **DOT, ADR, IMDG, IATA**: RESIN SOLUTION
- **DOT**, **ADR, IMDG, IATA**: 1866 RESIN SOLUTION
- **Transport hazard class(es)**
  - **Class**: 3 Flammable liquids
  - **Label**: 3
- **Packing group**: DOT, ADR, IMDG, IATA
  - **Class**: III
- **Environmental hazards**:
  - **Marine pollutant**: No
- **Special precautions for user**
  - **Danger code (Kemler)**: 33
  - **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
### 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.

  - **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
    - GHS07

  - **Signal word** Warning

  - **Hazard statements**
    
    - H226 Flammable liquid and vapor.
    - H315 Causes skin irritation.
    - H319 Causes serious eye irritation.

  - **Precautionary statements**
    
    - P101 If medical advice is needed, have product container or label at hand.
Material Safety Data Sheet
acc. to ISO/DIS 11014

Tradename: LOR B Series Resists

(Ponted. of page 7)

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.
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.
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)