

**MICRO-CHEM**  
**SAFETY DATA SHEET**PAGE 1 of 9  
Rev. Date: 18 December 2008**SECTION 1. PRODUCT AND COMPANY IDENTIFICATION** -----

PRODUCT USE: Organic Polymer Solution  
TRADE NAME: LOR A Series Resists  
PRODUCT #: See Table 1 – Section 9

SUPPLIER: MicroChem Corporation  
90 Oak Street, PO Box 426  
Newton, MA 02464-0002

TELEPHONE: (617) 965-5511  
FAX: (617) 965-5818  
CHEMTREC USA  
EMERGENCY #: (800) 424-9300  
CHEMTREC INTL  
EMERGENCY #: (703) 527-3887  
MSDS DATE: 18 December 2008

**SECTION 2. HAZARDS IDENTIFICATION** -----**Hazardous Classification**

Acute toxicity (oral) - Category 4  
Acute toxicity (inhalation – gas/vapour) – Category 4  
Flammable liquids - Category 3  
Serious eye damage/eye irritation - Category 2A  
Skin corrosion/irritation - Category 3  
Target organ systemic toxicant single exp - Category 3  
Target organ systemic toxicant repeat exp - Category 2

Signal Word: **WARNING!****Hazards**

Flammable liquid and vapour.  
Causes serious eye irritation.  
Causes mild skin irritation.  
Harmful if inhaled.  
Harmful if swallowed.  
May cause damage to organs through prolonged or repeated exposure.  
May cause drowsiness and dizziness.  
May cause respiratory irritation.

**Precautions**

Do not eat, drink or smoke when using this product.  
Use only outdoors or in a well-ventilated area.  
Wash hands thoroughly after handling.  
Do not breathe mist or vapors.  
Keep away from heat, sparks and open flame. - No smoking.  
Use explosion-proof equipment.  
Wear protective gloves and eye/face protection.

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Take precautionary measures against static discharge.  
If skin irritation occurs, get medical advice/attention.  
IF INHALED: remove to fresh air and keep at rest in a position comfortable for breathing.  
In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.  
Rinse mouth.  
Call a POISON CENTRE or doctor/physician if you feel unwell.  
Use extinguishing measures that are appropriate to local circumstances

**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS -----**

INGREDIENTS: Cyclopentanone (CAS: 120-92-3); 65-90%.  
Propylene glycol monomethyl ether (CAS: 107-98-2); 10-15%  
Polyaliphatic imide copolymer (CAS: 102322-80-5); 1-20%  
Proprietary Dye ; 0.1 - 2%  
Proprietary Surfactant; <1%

**SECTION 4. FIRST AID MEASURES-----**

INHALATION: If respiratory irritation or distress occurs remove victim to fresh air and seek medical attention.  
INGESTION: Do not induce vomiting unless instructed to do so by a physician. Wash out mouth with water and keep at rest. Seek immediate medical attention.  
SKIN CONTACT: In case of contact, immediately wash with plenty of soap and water for at least 5 minutes. Seek medical attention. Remove contaminated clothing and shoes. Clean contaminated clothing and shoes before re-use.  
EYE CONTACT: Hold eyelids open and flush with a steady, gentle stream of water for at least 15 minutes. Seek medical attention.

**SECTION 5. FIRE-FIGHTING MEASURES-----**

EXTINGUISHING MEDIA: Dry chemical, carbon dioxide, alcohol foam, and universal foam.  
SPECIAL FIRE FIGHTING PRECAUTIONS: Firefighters should wear NIOSH/MSHA approved self-contained breathing apparatus and full protective clothing. Remove all ignition sources if it can be done safely.  
UNUSUAL FIRE OR EXPLOSION HAZARDS: Product will burn under fire conditions. Containers may explode (due to build-up of pressure) when exposed to extreme heat. Vapors may travel a considerable distance to a source of ignition and flash back along vapor trail.

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SECTION 6. ACCIDENTAL RELEASE MEASURES-----

EVACUATION  
PROCEDURES & SAFETY: Wear appropriate protective gear for the situation. See Personal Protection information in Section 8.

CLEANUP & DISPOSAL  
OF SPILL: Absorb with an inert absorbent. Sweep up and place in an appropriate closed container (see Section 7). Clean up residual material by washing area with water. Collect washings for disposal.

ENVIRONMENTAL &  
REGULATORY REPORTING: Do not flush to drain. If required proper authorities should be notified.

SECTION 7. HANDLING AND STORAGE-----

PRECAUTIONS: Store container tightly closed in well-ventilated place.

STORAGE: Store in tightly closed container in a cool, dry, well-ventilated environment away from ignition sources. Recommended container materials are polyethylene or glass.

HANDLING: Use only under yellow light.  
Keep away from heat, sparks, and flames.  
Use only with mechanical exhaust.  
Do not contact with skin, eyes, and clothing. Severe eye irritant.  
Avoid prolonged or repeated contact with skin.  
Do not breathe vapors or mist.  
Wash with soap and water after handling.  
Have safety shower and eye wash available.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION-----

OCCUPATIONAL  
EXPOSURE LIMITS: Propylene glycol monomethyl ether: ACGIH TLV 100 ppm 8hr  
TWA, STEL 150 ppm.

RESPIRATORY  
PROTECTION: Under normal conditions, use of air-purifying (half-mask/full-face) respirator with cartridges/canisters approved for use against organic vapors, dust, mists and fumes is recommended.

VENTILATION: General area dilution/exhaust ventilation.  
SKIN PROTECTION: Skin contact should be minimized through the use of gloves and suitable long-sleeved clothing.

EYE PROTECTION: Eye contact should be prevented through use of chemical safety glasses with side shields or splash proof goggles.

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## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES-----

APPEARANCE: Clear, red  
 ODOR: Slightly sweet  
 BOILING POINT: 120-130 °C (248-266 °F)  
 SPECIFIC GRAVITY: See Table 1 below, @ 20 °C (68 °F)  
 VAPOR PRESSURE: 9 mm Hg @ 20 °C (68 °F)  
 VAPOR DENSITY: 2.3 (air=1)  
 H<sub>2</sub>O SOLUBILITY: 10-20% @ 20 °C, by wt.  
 % VOLATILES: See Table 1 below  
 FLASH POINT: 30 °C (86 °F) TCC  
 AUTOIGNITION TEMP: 278 °C (532 °F)  
 FLAMMABILITY LIMITS: 1.3 lower (vol/vol %)  
 unk. Upper

Table 1

Name	Product #	Specific Gravity	Volatiles (% by wt)	VOC (g/L)
LOR 0.5A	G516602	0.965	98	945
LOR 0.7A	G516603	0.968	97	940
LOR 1A	G516604	0.973	96	940
LOR 2A	G516605	0.977	95	935
LOR 3A	G516606	0.98	94	920
LOR 4A	G516607	0.982	93	915
LOR 5A	G516608	0.984	92	905
LOR 6A	G516658	0.986	92	905
LOR 7A	G516609	0.988	91	900
LOR 8A	G516610	0.988	90	895
LOR 10A	G516611	0.99	89	885
LOR 15A	G516612	0.99	87	860
LOR 20A	G516614	0.99	86	850
LOR 30A	G516616	0.99	84	830
LOR 50A	G516619	0.995	81	820

## SECTION 10. STABILITY AND REACTIVITY-----

STABILITY: Stable  
 INCOMPATIBILITY: Strong Oxidizing Agents, Strong Bases, Strong Acids, Strong Reducing Agents, Iron, Hydrazine  
 HAZARDOUS POLYMERIZATION: May occur. Avoid extreme pH.  
 HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS: Oxides of carbon.

## SECTION 11. TOXICOLOGICAL INFORMATION-----

**Routes of Entry:** Inhalation, ingestion, eye and skin contact

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**Symptoms of Exposure:** Causes severe eye irritation. Causes mild skin irritation. May cause upper respiratory tract irritation, central nervous system depression, shortness of breath, drowsiness and confusion. Prolonged, repeated exposure to high concentrations can cause adverse effects to liver and kidney.

**Acute Toxicity****Acute Oral Toxicity**

Component: Cyclopentanone  
LD50 rat 1180 mg/kg  
Component: Propylene glycol monomethyl ether  
LD50 rat 6100 mg/kg  
Component: Polyaliphatic imide copolymer  
LD50 rat >5000 mg/kg

**Acute Dermal Toxicity**

Component: Cyclopentanone  
LD50 rabbit >5000 mg/kg  
Component: Propylene glycol monomethyl ether  
LD50 rat 13,000 mg/kg  
Component: Polyaliphatic imide copolymer  
LD50 rabbit >5000 mg/kg

**Acute Inhalation Toxicity**

Component: Cyclopentanone  
LC50 rat 19.5 mg/l  
Component: Propylene glycol monomethyl ether  
LC50 rat 54.6 mg/l 4 hr

**Specific Concentration Limits**

The values listed below represent the percentages of ingredients of unknown toxicity:

3.5% Acute oral toxicity  
3.5% Acute dermal toxicity  
14.5% Acute inhalation toxicity

**Skin corrosion/irritation**

Component: Cyclopentanone  
Acute Skin Irritation: skin irritation, 500mg, rabbit. Mildly irritating  
Component: Propylene glycol monomethyl ether  
Acute Skin Irritation: this substance is a mild skin irritant

**Serious eye damage/eye irritation**

Component: Cyclopentanone  
Acute Eye Irritation: eye irritation, 100mg, rabbit. Severely irritating.  
Component: Propylene glycol monomethyl ether  
Acute Eye Irritation: Liquid is not irritating to eye. Mild eye irritation reported with vapor.

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**Respiratory or Skin Sensitisation**

Component: Cyclopentanone  
Skin sensitization – guinea pig – not a sensitizer  
Skin sensitization – human – not a sensitizer  
Component: Propylene glycol monomethyl ether  
Skin sensitization - Did not induce skin sensitization

**Carcinogenicity**

Component: Cyclopentanone  
Not considered carcinogenic by NTP, IARC, ACGIH or OSHA.  
Component: Propylene glycol monomethyl ether  
Studies in laboratory animals indicate that this substance is not carcinogenic.

**Germ Cell Mutagenicity**

Component: Cyclopentanone  
Ames Test – negative with and without metabolic activation  
Component: Propylene glycol monomethyl ether  
No evidence of genotoxicity in standard bacterial and mammalian test systems in vitro.

**Specific Target Organ Systemic Toxicity (single exposure)**

Component: Cyclopentanone  
Central Nervous system  
Component: Propylene glycol monomethyl ether  
Central Nervous System

**Specific Target Organ Systemic Toxicity (repeated exposure)**

Component: Cyclopentanone  
Central Nervous System  
Component: Propylene glycol monomethyl ether  
Central Nervous System, Liver, Kidney

**Toxicity to Reproduction**

Component: Cyclopentanone  
No adverse effects to reproduction or adverse developmental effects known.  
Component: Propylene glycol monomethyl ether  
This substance is not expected to cause adverse reproductive effects at dose levels that are not also toxic to the parent.

**Aspiration Hazards**

No data found.

**SECTION 12. ECOLOGICAL INFORMATION**

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**Acute aquatic toxicity**

**Acute toxicity to fish**

Component: Cyclopentanone  
48 hr LC50 *Leuciscus idus melanotus*: 2950 mg/L  
Component: Propylene glycol monomethyl ether  
96-h LC50 (*Pimephales promelas*): 20,800 mg/L

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**Acute toxicity to aquatic invertebrates**

Component: Cyclopentanone  
24 hr EC50 Daphnia magna: 1435 mg/L  
Component: Propylene glycol monomethyl ether  
96-h EC50 Daphnia magna: 23,300 mg/L

**Acute toxicity to algae**

Component: Cyclopentanone  
72 hr EC50 Scenedesmus subspicatus >100 mg/l  
Component: Propylene glycol monomethyl ether  
96 hr EC50 green algae >1,000 mg/l

**Specific concentration limits**

The values listed below represent the percentages of ingredients of unknown toxicity.

15% Acute aquatic toxicity – fish  
15% Acute aquatic toxicity – aquatic invertebrates  
15% Acute aquatic toxicity - algae

**Chronic aquatic toxicity****Chronic toxicity to fish**

No data found

**Chronic toxicity to aquatic invertebrates**

No data found

**Chronic toxicity to algae**

No data found

**Persistence/Degradability**

Component: Cyclopentanone  
Inherently biodegradable  
Component: Propylene glycol monomethyl ether  
Biodegradable under aerobic or anaerobic conditions. Aerobic biodegradation of 96% after 28 days. Anaerobic biodegradation of 38% after 81 days (30 day lag period).

**Bioaccumulation**

Component: Cyclopentanone  
Not expected to bioaccumulate  
Component: Propylene glycol monomethyl ether  
Not expected to bioaccumulate in aquatic organisms. Log Kow (calculated):  
-0.437

**Mobility**

Component: Cyclopentanone  
No data found  
Component: Propylene glycol monomethyl ether  
Rapid dissipation in soil expected. Koc value between 1 and 50 indicating very high soil mobility.

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**SECTION 13. DISPOSAL CONSIDERATIONS**

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**Precautions**

CONTAINERS MAY BE HAZARDOUS WHEN EMPTY. Since emptied containers retain product residue follow all MSDS and label warnings even after container is emptied. Dispose of contents/container in accordance with local regulation.

**Disposal**

Comply with applicable local, state or international regulations regarding the proper disposal of this material and/or containers. Dispose of contents/container in accordance with local regulations.

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**SECTION 14. TRANSPORTATION INFORMATION**

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HAZARD CLASSIFICATION: Flammable Liquid  
SHIPPING NAME: Resin Solution  
UN NUMBER: UN 1866  
PACKING GROUP III

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**SECTION 15. REGULATORY INFORMATION**

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**US AND INTERNATIONAL INFORMATION**

Chemical Inventories: TSCA (US)- Components are listed or comply with TSCA regulations.  
DSL/NDSL (Canada) – Components are listed or are exempt.  
EINECS/ELINCS/NLP (EU) – Components are listed or exempt.

SARA Title III: This product IS NOT subject to SARA Title III, Section 313 Reporting Requirements.

Calif. SCAQMD Rule 443.1 VOC's: See Table 1 – Section 9

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**SECTION 16. OTHER INFORMATION**

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National Fire Protection Association Hazard Ratings – NFPA:

- 2 Health Hazard Rating
- 3 Flammability Rating
- 0 Reactivity Rating

For additional information contact: [productsafety@microchem.com](mailto:productsafety@microchem.com)

To the best of our knowledge, the above information is believed to be accurate but does not claim to be all-inclusive and is intended to be used only as a guide. The supplier makes no warranty of any kind, expressed or implied, concerning the use of this product



LOR 3A

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and shall not be held liable for any damage resulting from handling or from contact with the above product. User assumes all risks incident to its use.

MSDS Revision Information: NEW

