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MATERIAL SAFETY DATA SHEET

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SECTION 1. CHEMICAL IDENTIFICATION

CHEMICAL NAME: Organic Polymer Solution
TRADE NAME: 950 PMMA Series Resists in Anisole
Positive Radiation Sensitive Resists
PRODUCT #: See Table 1 – Section 9

SECTION 2. COMPOSITION

HAZARDOUS
INGREDIENTS: Anisole (CAS: 100-66-3); 85-99% (See Table 1 – Section 9)
OTHER
INGREDIENTS: Poly(methylmethacrylate) (CAS: 9011-14-7)

SECTION 3. HAZARD DATA

INFLAMMABILITY: Flammable liquid.
SKIN CONTACT: May cause skin irritation.
EYE CONTACT: Vapor or mist is irritating to the eyes.
INHALATION: Vapor or mist is irritating to mucous membranes and upper respiratory tract.
MUTAGENICITY: Not known to be mutagenic.
CARCINOGENICITY: Not known to be carcinogenic.
TARGET ORGANS: Eyes, Skin, Respiratory System, and Nervous System.

SECTION 4. FIRST AID MEASURES

INHALATION: Move the affected person away from the contaminated area and into the fresh air. If necessary seek medical advice.
INGESTION: Rinse mouth out with water. Consult a doctor if necessary.
SKIN CONTACT: Rinse with plenty of water.
EYE CONTACT: Rinse with water while keeping the eyes wide open.

SECTION 5. FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Dry chemical, carbon dioxide.
SPECIAL FIRE FIGHTING
PRECAUTIONS: Wear self-contained breathing apparatus (SCBA) and personal protective equipment to prevent contact with skin and eyes.
UNUSUAL FIRE OR
EXPLOSION HAZARDS: Heat will build pressure and may rupture closed containers. Keep containers cool with water spray.

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SECTION 6. ACCIDENTAL RELEASE PROCEDURES

EVACUATION

PROCEDURES & SAFETY: Wear appropriate protective gear for the situation. See Personal Protection information in Section 8. Eliminate all sources of ignition. Do not breathe vapors or dust.

CLEANUP & DISPOSAL OF SPILL:

Absorb with an inert absorbent. Sweep up and place in an appropriate closed container. Use clean, non-sparking tools to collect absorbed material.

ENVIRONMENTAL &

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

SECTION 7. STORAGE AND HANDLING PRECAUTIONS

STORAGE:

Store in tightly closed container in a cool, dry, well-ventilated environment away from ignition sources.

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.
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.
Store and transfer under a blanket of dry inert gas.

SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

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:

PVC protective gloves are highly recommended.

EYE PROTECTION:

Safety goggles are highly recommended.

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SECTION 9. PHYSICAL AND CHEMICAL DATA

APPEARANCE: Clear to straw colored liquid
ODOR: Strong
BOILING POINT: 154 °C (309 °F)
SPECIFIC GRAVITY: See Table 1 below
VAPOR PRESSURE: 13 mm @ 42 °C (108 °F)
VAPOR DENSITY: 3.7 (air=1)
H₂O SOLUBILITY: Slightly soluble.
% VOLATILES: See Table 1 below
EVAPORATION RATE: 0.1 (BuAc=1)
FLASH POINT: 44 °C (111 °F) CC
AUTOIGNITION TEMP: 475 °C (887 °F)
EXPLOSION LIMITS: unk. Lower
 unk. Upper

Table 1

| Name | Product # | Specific Gravity | Volatiles (% by wt.) | VOC (g/L) |
|---------|-----------|------------------|----------------------|-----------|
| 950A1 | M230001 | 0.994 | 99 | 985 |
| 950A2 | M230002 | 0.996 | 98 | 975 |
| 950A3 | M230003 | 0.998 | 97 | 970 |
| 950A4 | M230004 | 1.000 | 96 | 960 |
| 950A4.5 | M230504 | 1.001 | 95.5 | 958 |
| 950A5 | M230005 | 1.004 | 95 | 955 |
| 950A5.5 | M230505 | 1.004 | 94.5 | 950 |
| 950A6 | M230006 | 1.005 | 94 | 945 |
| 950A7 | M230007 | 1.007 | 93 | 935 |
| 950A8 | M230008 | 1.009 | 92 | 930 |
| 950A9 | M230009 | 1.010 | 91 | 920 |
| 950A10 | M230010 | 1.012 | 90 | 910 |
| 950A11 | M230011 | 1.014 | 89 | 900 |
| 950A12 | M230012 | 1.016 | 88 | 895 |
| 950A13 | M230013 | 1.018 | 87 | 885 |
| 950A15 | M230015 | 1.022 | 85 | 870 |

SECTION 10. REACTIVITY DATA

STABILITY: Stable
INCOMPATIBILITY: Strong Oxidizing Agents, Strong Acids, Strong Bases
HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS: Carbon Monoxide, Carbon Dioxide, Phenol

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SECTION 11. TOXICITY HAZARDS

ACUTE TOXICITY:

As Anisole:

ORAL: LD50 (rat): 3700 mg/kg

SKIN: LD50 (rat): >5000 mg/kg

LOCAL EFFECTS: Slightly irritating to the skin. Not irritating to rabbits on ocular application. No sensitizing reaction was observed for guinea pigs.

SECTION 12. ECOLOGICAL DATA

BIODEGRADABILITY: Readily biodegradable.
BIOACCUMULATION: Not potentially bioaccumulable.
ECOTOXICITY: EC50 (Daphnia/24 hr): 40 mg/l

SECTION 13. DISPOSAL CONSIDERATIONS

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

SECTION 14. TRANSPORTATION INFORMATION

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

SECTION 15. REGULATORY INFORMATION

EUROPEAN INFORMATION

EINECS LISTED

EC Nos: Anisole 202-876-1

RISK & SAFETY PHRASES

R10 Flammable

S16 Keep away from sources of ignition. No smoking.

S24 Avoid contact with skin.

INDICATIONS OF DANGER

None

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US AND INTERNATIONAL INFORMATION

HAZARDOUS LISTINGS: All ingredients appear on the TSCA Inventory of Chemical Substances, EINECS, Canadian DSL and the Japan ENCS Listing.

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

SECTION 16. ADDITIONAL PRECAUTIONS AND COMMENTS

National Fire Protection Association Hazard Ratings – NFPA:

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

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 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:

- A) Removed "NANO" name from trade name.
- B) General update of MSDS. Added European Risk and Safety phrases to Section 15.

MICRO CHEM

1254 Chestnut Street Newton, MA 02464-1418
TEL: (617) 965 - 5511 FAX: (617) 965 - 5818

950 PMMA A 5.5**POSITIVE RADIATION SENSITIVE RESIST**

5.5% in Anisole

| | | | |
|-------------|----------|--------------|----------|
| Product No. | M230505 | Lot No. | 06030184 |
| Expiration | 4/1/2007 | Manufactured | 3/1/2006 |

CERTIFICATE OF ANALYSIS

MicroChem Corp. has completed the analysis of the above lot of material with the results listed below.

| | <u>Specification</u> | <u>Result</u> |
|--------------------------|----------------------|------------------|
| Appearance | Clear, colorless | Clear, colorless |
| Solids Content, % | 5.50 +/- 0.10 | 5.52 |
| Viscosity at 25° C, cst | Run & Record | 91.3 |
| Solvent Impurities by GC | < 1.0 % | 0.6% |
| Filtration Level | 0.2 µm | 0.2 µm |

MicroChem Corp. hereby certifies that the above material meets all specifications for this product and conforms to our Quality Assurance requirements.

Certified by:



Thomas Quinney
QA Chemist

9-Mar-06