MICRO • CHEM

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MATERIAL SAFETY DATA SHEET

12 April 2001

SECTION 1. CHEMICAL IDENTIFICATION

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

SECTION 2. COMPOSITION

HAZARDOUS INGREDIENTS:	Chlorobenzene (CAS: 108-90-7); 88-99% (See Table 1 – Section 9)
OTHER INGREDIENTS:	Poly(methylmethacrylate) (CAS: 9011-14-7)

SECTION 3. HAZARD DATA

INFLAMMABILITY:	Combustible liquid.
SKIN CONTACT:	Irritation and dermatitis on prolonged contact.
EYE CONTACT:	Moderate irritation.
INHALATION:	Vapor or mist is irritating to mucous membranes and upper respiratory tract.
MUTAGENICITY:	Not known to be mutagenic.
CARCINOGENICITY:	Chlorobenzene - positive in rats (NCI)
TARGET ORGANS:	Eyes, Respiratory Tract, and Skin.

SECTION 4. FIRST AID MEASURES

FIRST AID:	
INHALATION:	If inhaled, remove to fresh air. If patient has stopped breathing, give artificial respiration. If breathing is difficult give oxygen. Contact physician immediately.
INGESTION:	DO NOT induce vomiting. Call local Poison Control Center for assistance. Get medical attention immediately.
SKIN CONTACT:	Rinse with water for 15 minutes while removing contaminated clothing and shoes. Wash affected area with soap and water. Wash contaminated clothing, discard contaminated shoes.
EYE CONTACT:	Rinse immediately with water, flush for 15 min. Get emergency medical assistance.

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SECTION 5. FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Dry chemical, carbon dioxide, and foam.

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. Vapor may travel a considerable distance to source of ignition and flash back.

SECTION 6. ACCIDENTAL RELEASE PROCEDURES

Evacuate Area.
Eliminate all ignition sources.
Wear self-contained breathing apparatus (SCBA), rubber boots, and heavy rubber gloves. Avoid eye or skin contact. Cover with dry absorbent material and collect in closed container for disposal using non-sparking tools. Ventilate area and wash spill site with ketonic or acetate type solvent after material pickup is complete, rinse with water. All clean up should be carried out in accordance with federal, state, and local regulations.

SECTION 7. STORAGE AND HANDLING PRECAUTIONS

STORAGE: Store in tightly closed container in a cool environment away from direct sunlight.

HANDLING: Keep away from heat, sparks, and flames.
Do not breathe vapors.
Use only with mechanical exhaust.
Avoid contact with skin, eyes, and clothing.
Avoid prolonged or repeated exposure
Wear heavy rubber gloves.
Wash with soap and water after handling.
Have safety shower and eye wash available.

SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

RESPIRATORY PROTECTION: In case of spills, use of self-contained breathing apparatus (SCBA) is recommended.

VENTILATION: Local or general mechanical ventilation is required.

SKIN PROTECTION: Heavy rubber gloves are highly recommended.

EYE PROTECTION: Safety goggles are highly recommended.

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SECTION 9. PHYSICAL AND CHEMICAL DATA

APPEARANCE:	Clear, colorless, viscous liquid
ODOR:	Slight almond-like
BOILING POINT:	132 °C (270 °F)
SPECIFIC GRAVITY:	See Table 1 below
VAPOR PRESSURE:	8.8 mm @ 20 °C (68 °F)
VAPOR DENSITY:	3.9 (air=1)
H_2O SOLUBILITY:	0.05% @ 20 °C, by wt.
% VOLATILES:	See Table 1 below
EVAPORATION RATE:	1 (BuAc=1)
FLASH POINT:	28 °C (82 °F) TCC
AUTOIGNITION TEMP:	638 °C (1180 °F)
EXPLOSION LIMITS:	1.3% lower 9.6% upper

Table 1

Name	Product #	Specific Gravity (g/ml)	Volatiles (% by wt.)	VOC (g/L)
950C1	M240001	1.106	99	1095
950C2	M240002	1.107	98	1085
950C3	M240003	1.108	97	1075
950C4	M240004	1.109	96	1065
950C4.5	M240504	1.109	95.5	1060
950C5	M240005	1.110	95	1055
950C6	M240006	1.111	94	1045
950C6.5	M240506	1.112	93.5	1040
950C7	M240007	1.113	93	1035
950C8	M240008	1.114	92	1025
950C9	M240009	1.115	91	1015
950C10	M240010	1.115	90	1005
950C11	M240011	1.116	89	995
950C12	M240012	1.117	88	995

SECTION 10. REACTIVITY DATA

STABILITY:	Stable
INCOMPATIBILITY:	Oxidizing Agents, Strong Acids
HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS:	Carbon Monoxide, Carbon Dioxide, Phosgene, Hydrogen Chloride, and other toxic vapors

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SECTION 11. TOXICITY HAZARDS

ACUTE EFFECTS:
May be harmful if swallowed, inhaled, or absorbed through the skin.
Can act as a mild eye and mucous membrane irritant, primary skin irritant, and central nervous system depressant. Prolonged or repeated skin contact can cause irritation and dermatitis through defatting of the skin.
Exposure can cause headache, drowsiness, dizziness, and intoxication. Acute exposure causes eye and nose irritation, narcosis, loss of coordination, and loss of consciousness.
Chronic inhalation may cause lung, liver, and kidney damage.
Ingestion can cause gastrointestinal tract discomfort.

As Chlorobenzene:

ORAL:	LD50 (rat): LD50 (rabbit):	2910 mg/Kg 2250 mg/Kg
INHALATION:	LC50:	not listed
TLV:	ACGIH (TWA)	75 ppm (350 mg/M^3)
PEL:	OSHA (8hr TWA)	75 ppm (350 mg/M^3)

SECTION 12. ECOLOGICAL DATA

No data available at this time

SECTION 13. DISPOSAL CONSIDERATIONS

Burn in an EPA-licensed chemical incinerator equipped with an afterburner and scrubber at an approved waste disposal facility. Observe all federal, state, and local environmental regulations.

SECTION 14. TRANSPORTATION INFORMATION

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

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SECTION 15. REGULATORY INFORMATION

HAZARDOUS LISTINGS:	All ingredients appear on the TSCA Inventory of Chemical Substances, EINECS, and the Japan Hazardous Chemical Listing.
SARA Title III:	This product IS subject to SARA Title III, Section 313 Reporting Requirements as chlorobenzene.
CERCLA Reportable Quantity:	100 lbs as chlorobenzene @ 88-99%
RCRA Maximum Concentration:	100 mg/L as chlorobenzene @ 88-99%
Calif. SCAQMD Rule 443.1 VOC's:	See Table 1 – Section 9

SECTION 16. ADDITIONAL PRECAUTIONS AND COMMENTS

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.

MicroChem Corp.
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NANO™

950 PMMA C 2

POSITIVE RADIATION SENSITIVE RESIST

2% in Chlorobenzene

Product No.	M240002	Lot No.	00045
Expiration	Feb-01	Manufactured	Jan-00

CERTIFICATE OF ANALYSIS

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

Appearance	Clear, colorless
Solids Content, %	2.05
Viscosity at 25° C, cst	8.77
Solvent Impurities by GC	< 0.5 %
Filtration Level	0.2 µm

Certified by:

Jeremy Golden

Jeremy Golden
Chemist

25-Jan-00