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**MATERIAL SAFETY DATA SHEET**

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**SECTION 1. CHEMICAL IDENTIFICATION**

CHEMICAL NAME: Organic Polymer Solution  
TRADE NAME: NANO™ 495PMMA Series Resists in Chlorobenzene  
Positive Radiation Sensitive Resists  
PRODUCT #: See Table 1 – Section 9

**SECTION 2. COMPOSITION**

HAZARDOUS  
INGREDIENTS: Chlorobenzene (CAS: 108-90-7); 91-98% (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**

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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**

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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**

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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**

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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<sub>2</sub>O 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)
495C2	M140002	1.107	98	1085
495C3	M140003	1.109	97	1075
495C4	M140004	1.110	96	1065
495C5	M140005	1.110	95	1055
495C6	M140006	1.111	94	1045
495C7	M140007	1.113	93	1035
495C8	M140008	1.114	92	1025
495C9	M140009	1.115	91	1015

**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 or consciousness.

Chronic inhalation may cause lung, liver, and kidney damage.

Ingestion can cause gastrointestinal tract discomfort.

**As Chlorobenzene:**

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

**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**

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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 @ 91-98%

RCRA Maximum Concentration: 100 mg/L as chlorobenzene @ 91-98%

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

**SECTION 16. ADDITIONAL PRECAUTIONS AND COMMENTS**

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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.