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MATERIAL SAFETY DATA SHEET

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SECTION 1. CHEMICAL IDENTIFICATION -----

CHEMICAL NAME: Organic Polymer Solution
TRADE NAME: NANO™ MMA(8.5)MAA Copolymer Series Resists
Positive Radiation Sensitive Resists
PRODUCT #: See Table 1 – Section 9

SECTION 2. COMPOSITION-----

HAZARDOUS
INGREDIENTS: Ethyl Lactate (CAS: 97-64-3); 85-98% (See Table 1 – Section 9)
OTHER
INGREDIENTS: Poly(methylmethacrylate-co-methacrylate acid) (CAS: 25086-15-1)

SECTION 3. HAZARD DATA-----

INFLAMMABILITY: Combustible liquid.
SKIN CONTACT: 2068 mg/kg/day percutaneous: slight erythema.
3012 mg/kg/day embryo percutaneous: no adverse effects.
EYE CONTACT: Moderate temporary irritation.
INHALATION: Irritating to mucous membranes and upper respiratory tract.
MUTAGENICITY: No positive response for several tested salmonella strains.
CARCINOGENICITY: Not listed in NTP, IARC, or OSHA as a carcinogen.
OTHER: May be harmful by inhalation, ingestion, or skin absorption. May cause irritation.
TARGET ORGANS: Behavioral (muscle weakness), respiratory.

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: If substantial amounts are swallowed, have patient drink large amounts of water to dilute the product in the system. Contact physician immediately.
SKIN CONTACT: Rinse with water. Wash with soap and water.
EYE CONTACT: Rinse immediately with water, flush for 15 min. Contact a physician if irritation develops.

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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. Combustible.

UNUSUAL FIRE OR EXPLOSION HAZARDS: Emits toxic fumes under fire conditions.

SECTION 6. ACCIDENTAL RELEASE PROCEDURES

Evacuate Area.
Eliminate all ignition sources.
Wear respirator, chemical safety goggles, rubber boots, and heavy rubber gloves. Avoid eye or skin contact. Absorb on sand or vermiculite and collect in closed container for disposal using non-sparking tools. Ventilate area and wash spill site after material pickup is complete. 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 with adequate ventilation.
Avoid contact with skin, eyes, and clothing.
Wear impervious 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: Impervious gloves are recommended.
EYE PROTECTION: Safety goggles are recommended.

SECTION 9. PHYSICAL AND CHEMICAL DATA

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APPEARANCE: Clear colorless liquid
 ODOR: Mild pleasant
 BOILING POINT: 150 °C (302 °F)
 SPECIFIC GRAVITY: See Table 1 below
 VAPOR PRESSURE: 1.2 mm @ 20 °C (68 °F)
 VAPOR DENSITY: 4.1 (air=1)
 H₂O SOLUBILITY: See Table 1 below
 % VOLATILES: See Table 1 below
 EVAPORATION RATE: <1 (BuAc=1)
 FLASH POINT: 53 °C (120 °F) TCC
 EXPLOSION LIMITS: 1.5% lower
 10.6% upper
 AUTO IGNITION TEMP: 400 °C (752 °F)

Table 1

Name	Product#	Specific Gravity	Volatiles (% by wt.)	H2O Solubility (% by wt)	VOC (g/L)
8.5EL2	M310002	1.030	98	98	1015
8.5EL3	M310003	1.032	97	97	1005
8.5EL4	M310004	1.035	96	96	995
8.5EL5	M310005	1.038	95	95	985
8.5EL6	M310006	1.04	94	94	980
8.5EL7	M310007	1.043	93	93	975
8.5EL8	M310008	1.045	92	92	965
8.5EL9	M310009	1.047	91	91	955
8.5EL10	M310010	1.048	90	90	945
8.5EL11	M310011	1.051	89	89	935
8.5EL12	M310012	1.052	88	88	925
8.5eEL12.5	M310512	1.053	87.5	87.5	920
8.5EL13	M310013	1.055	87	87	920
8.5EL14	M310014	1.057	86	86	910
8.5EL15	M310015	1.058	85	85	900

SECTION 10. REACTIVITY DATA

STABILITY: Stable
 INCOMPATIBILITY: Oxidizing agents, bases, acids
 HAZARDOUS POLYMERIZATION: Will not occur
 HAZARDOUS COMBUSTION OR
 DECOMPOSITION PRODUCTS: Carbon Monoxide, Carbon Dioxide

SECTION 11. TOXICITY HAZARDS

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ACUTE EFFECTS:

May be harmful by inhalation, ingestion, or skin absorption. May cause irritation.

ORAL: LD50 (mouse): 2500mg/kg, subcutaneous.
600 mg/kg, intravenous.
LD50: >2000 mg/kg. FDA and FAO/WHO approved as
food additive.

INHALATION: LC50: >5000 mg/m³

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

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 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

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.