MATERIAL SAFETY DATA SHEET

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

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

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

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.