MICRO CHEM

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MATERIAL SAFETY DATA SHEET

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SECTION 1. CHEMICAL IDENTIFICATION

CHEMICAL NAME:	Organic Polymer Solution
TRADE NAME:	NANO™ PMGI SF Series Resists Positive Radiation Sensitive Resists
PRODUCT #:	See Table 1 – Section 9

SECTION 2. COMPOSITION

HAZARDOUS INGREDIENTS:	Cyclopentanone (CAS: 120-92-3); 65-85%. Tetrahydrofurfuryl alcohol (CAS: 97-99-4); 10-15%
OTHER INGREDIENTS:	Polyaliphatic imide copolymer (CAS: 123209-67-6) Proprietary Surfactant, <1%

SECTION 3. HAZARD DATA

INFLAMMABILITY:	Flammable liquid.
SKIN CONTACT:	May cause skin irritation.
EYE CONTACT:	May cause serious damage to the eyes.
INGESTION:	May be harmful if swallowed.
INHALATION:	Irritating to mucous membranes and upper respiratory tract.
MUTAGENICITY:	Not known to be mutagenic.
CARCINOGENICITY:	Not considered carcinogenic by NTP, IARC and OSHA
OTHER:	Repeated or prolonged contact or exposure to vapors of tetrahydrofurfuryl alcohol may cause central nervous system depression and decreased male fertility.
TARGET ORGANS:	Eyes, Nervous System, Respiratory Tract, Reproductive

SECTION 4. FIRST AID MEASURES

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:	Wash out mouth with water if conscious. 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.
EYE CONTACT:	Rinse immediately with water, flush for 15 min. lifting eyelids frequently. 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:	Vapor may travel considerable distance to source of ignition and flash back. Heat will build pressure and may rupture closed containers. Forms explosive mixtures in air. Keep containers cool with water spray.

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 after material pickup is complete, rinse with water. All clean up should be carried out in accordance with federal, state, and local regulations. If required proper authorities should be notified.

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. Do not contact with skin, eyes, and clothing. Severe eye irritant. 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:	Pale yellow to yellow liquid
ODOR:	Slightly sweet
BOILING POINT:	131-178 °C (268-352 °F)
SPECIFIC GRAVITY:	See Table 1 below
VAPOR PRESSURE:	8.7 mm @ 20 °C (68 °F)
VAPOR DENSITY:	2.3 (air=1)
H_2O SOLUBILITY:	40-50% @ 20 °C, by wt.
% VOLATILES:	See Table 1 below
EVAPORATION RATE:	1 (BuAc=1)
FLASH POINT:	30 °C (87 °F) TCC
AUTOIGNITION TEMP:	550 °C (1022 °F)
EXPLOSION LIMITS:	1.3 lower
	unk. upper

Table 1

Name	Product #	Specific Gravity	Volatiles (% by wt.)	VOC (g/L)
SF2	G113102	0.968	98	950
SF3	G113103	0.970	97	945
SF4	G113104	0.973	96	935
SF5	G113105	0.975	95	930
SF6	G113106	0.980	94	920
SF7	G113107	0.981	93	915
SF7.5	G113175	0.982	92.5	910
SF8	G113108	0.984	92	905
SF9	G113109	0.985	91	900
SF10	G113110	0.988	90	890
SF11	G113111	0.992	89	880
SF12	G113112	0.996	87.5	870
SF13	G113113	0.998	87	860
SF14	G113114	1.000	86	860
SF15	G113115	1.003	85	850
SF17	G113117	1.007	82.5	830
SF19	G113119	1.012	81	820
SF23	G113123	1.023	77	785

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SECTION 10. REACTIVITY DATA

STABILITY:	Stable
INCOMPATIBILITY:	Strong Oxidizing Agents, Strong Bases, Strong Reducing Agents
HAZARDOUS POLYMERIZATION:	Will not occur
HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS:	Carbon Monoxide, Carbon Dioxide

SECTION 11. TOXICITY HAZARDS

ACUTE EFFECTS:
May be harmful if swallowed, inhaled, or absorbed through the skin.
Irritating to eyes and respiratory tract. May cause serious damage to the eyes.
Vapor or mist is irritating to the eyes, mucous membranes and upper respiratory tract.
Eye and skin contact can cause headache, nausea, vomiting, dizziness, weakness, drowsiness, narcosis, and loss of coordination in humans.
Causes moderate skin irritation in rabbits.
Prolonged and/or repeated exposure can cause absorption of harmful amounts of material.

SUBCRONIC EFFECTS: Subchronic exposures (oral, dermal and inhalation) at relatively high levels have demonstrated systemic toxicity, reproductive toxicity, and central nervous system depression in either rats, rabbits or dogs.

ORAL:	LD50 (mam):	2000 mg/Kg as Cyclopentanone
	LD50 (rat)	1600 mg/Kg as Tetrahydrofurfuryl alcohol
IRRITATION:	skin:	500 mg - mild
	eyes:	100 mg/ 4 sec - severe

TLV:	ACGIH (TWA)	none established
PEL:	OSHA (8hr TWA)	none established

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.

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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.