

**M** Microlithography Chemical Corp.  
1254 Chestnut Street  
Newton, MA 02164-1418  
TEL: (617) 965 - 5511  
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**NANO<sup>TM</sup>**  
**REMOVER PG**

**POSITIVE RADIATION SENSITIVE RESIST REMOVER**

Product No.	G050200	Lot No.	97020
Expiration	Oct-98	Manufactured	Sep-97

**CERTIFICATE OF ANALYSIS**

MICROLITHOGRAPHY CHEMICAL CORP. has completed the analysis of the above lot of material with the results listed below.

Appearance	Clear, colorless	
Solvent by GC	>99%	N-Methyl-pyrrolid-inone
Evaporation Residue	<0.01%	
Filtration Level	0.1 $\mu$ m	

Certified by:



Dan Nawrocki  
Chemist

16-Sep-97



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## MATERIAL SAFETY DATA SHEET

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### SECTION 1. CHEMICAL IDENTIFICATION

CHEMICAL NAME: Organic Solvent Mixture  
TRADE NAME: NANO™ Remover PG  
PRODUCT #: Photoresist remover  
G050200

### SECTION 2. COMPOSITION

INGREDIENTS: N-Methyl Pyrrolidinone (CAS: 872-50-4); >99%  
OTHER  
INGREDIANTS: Proprietary Surfactant; <1%

### SECTION 3. HAZARD DATA

INFLAMMABILITY: Combustible liquid.  
SKIN CONTACT: Moderate skin irritation.  
EYE CONTACT: Severe eye irritant.  
INGESTION: May be harmful if swallowed in large quantities.  
INHALATION: No inhalation hazard identified.  
MUTAGENICITY: Not known to be mutagenic.  
CARCINOGENICITY: Not considered carcinogenic by NTP, IARC and OSHA  
OTHER:  
TARGET ORGANS: Bone Marrow, Thymus.

### 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. Obtain emergency medical attention.  
INGESTION: Wash out mouth with water if conscious. DO NOT induce vomiting.  
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 20-30 min. lifting eyelids frequently. Get emergency medical assistance.

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## SECTION 5. FIRE FIGHTING MEASURES

### EXTINGUISHING

MEDIA:

SPECIAL FIRE FIGHTING

PRECAUTIONS:

UNUSUAL FIRE OR

EXPLOSION HAZARDS:

Dry chemical, carbon dioxide, foam, water spray, fog.

Wear self-contained breathing apparatus (SCBA) and personal protective equipment.

Vapor may travel considerable distance to source of ignition and flash back. Heat will build pressure and may rupture closed containers. 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.

Possible teratogen.

Use only with mechanical exhaust.

Do not 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.

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## 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: Rubber gloves are highly recommended.  
EYE PROTECTION: Safety goggles are highly recommended.

## SECTION 9. PHYSICAL AND CHEMICAL DATA

APPEARANCE: Colorless Liquid.  
ODOR: Amine like.  
BOILING POINT: 202 °C (396 °F)  
SPECIFIC GRAVITY: 1.026  
VAPOR PRESSURE: 0.3 mm @ 20 °C (68 °F)  
H<sub>2</sub>O SOLUBILITY: complete  
% VOLATILES: 100% by weight  
EVAPORATION RATE: 0.06 (BuAc=1)  
FLASH POINT: 93 °C (199 °F) TCC  
AUTOIGNITION TEMP: 270 °C (518 °F)  
EXPLOSION LIMITS: 1.3 lower  
9.5 upper

## SECTION 10. REACTIVITY DATA

STABILITY: Stable  
INCOMPATIBILITY: Strong Oxidizing Agents, Strong Acids  
HAZARDOUS POLYMERIZATION: Will not occur  
HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS: Carbon Monoxide, Carbon Dioxide, Nitrogen Oxides.

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**SECTION 11. TOXICITY HAZARDS**

**ACUTE EFFECTS:**  
May be harmful if swallowed, inhaled, or absorbed through the skin. Irritating to the eyes and respiratory tract. May cause severe irritation to the eyes. Vapor or mist is irritating to the eyes, mucous membranes and upper respiratory tract. Prolonged exposure can cause stomach pains, nausea, vomiting, and/or diarrhea. Overexposure may cause reproductive disorders affecting pregnancy and/or fetal development

ORAL:	LD50(rat):	3914 mg/kg
IRRITATION:	Eyes:	100 mg moderate
TLV:	ACGIH(TWA)	none established
PEL:	OSHA (8 hr 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.

**SECTION 14. TRANSPORTATION INFORMATION**

HAZARD CLASSIFICATION: Not Regulated  
SHIPPING NAME: Not Regulated  
UN NUMBER: None

**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: 1026 g/l; vapor pressure 0.3 mm Hg @ 20 °C

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## 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.