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MATERIAL SAFETY DATA SHEET

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SECTION 1. CHEMICAL IDENTIFICATION-----

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

SECTION 2. COMPOSITION-----

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

SECTION 3. HAZARD DATA-----

INFLAMMABILITY: Combustible liquid.
SKIN CONTACT: Mildly irritating to the skin but not a skin sensitizer. Skin absorption hazard.
EYE CONTACT: Moderate to severe eye irritant. Excess redness of the conjunctiva may occur. Permanent corneal damage is not expected.
INGESTION: Ingestion may cause discomfort and irritation of the gastrointestinal tract, dizziness and shortness of breath.
INHALATION: Signs of respiratory tract irritation may occur after exposure to aerosol or high vapor concentrations.
MUTAGENICITY: Not known to be mutagenic.
CARCINOGENICITY: Not considered carcinogenic by NTP, IARC and OSHA.
TARGET ORGANS: Eye, Skin

SECTION 4. FIRST AID MEASURES-----

INHALATION: If overcome by exposure, remove victim to fresh air immediately. Give oxygen or artificial respiration as needed. Obtain emergency medical attention promptly.
INGESTION: If large quantity swallowed, give lukewarm water (pint/ ½ liter) if victim is completely conscious /alert. Do not induce vomiting. Risk of damage to lungs exceeds poisoning risk. Obtain emergency medical attention.
SKIN CONTACT: Immediately remove contaminated clothing. Wash skin thoroughly with mild soap and water. Flush with lukewarm water for 15 minutes. If sticky, use waterless cleaner first. Seek medical attention if ill effect or irritation develops.
EYE CONTACT: Thoroughly flush the eyes with large amounts of clean low pressure water for At least 15 minutes, occasionally lifting the upper and lower eyelids. If irritation persists, seek medical attention.

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SECTION 5. FIRE FIGHTING MEASURES

EXTINGUISHING

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

SPECIAL FIRE FIGHTING PRECAUTIONS:

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

UNUSUAL FIRE OR EXPLOSION HAZARDS:

When heated above the flash point, releases flammable vapors. When mixed with air and exposed to ignition source, vapors can burn in open or explode if confined. Vapors may be heavier than air. May travel long distances along the ground before igniting and flashing back to vapor source. Fine sprays/mists may be combustible at temperatures below normal flash point.

SECTION 6. ACCIDENTAL RELEASE PROCEDURES

EVACUATION

PROCEDURES & SAFETY: Wear appropriate protective gear for the situation. See Personal Protection information in Section 8. Eliminate all sources of ignition. Do not touch or walk through spilled material.

CLEANUP & DISPOSAL OF SPILL:

Absorb with an inert absorbent. Sweep up and place in an appropriate closed container (see Section 7). Use clean, non-sparking tools to collect absorbed material.

ENVIRONMENTAL &

REGULATORY REPORTING: Do not flush to drain. If required proper authorities should be notified.

SECTION 7. STORAGE AND HANDLING PRECAUTIONS

STORAGE:

Store in tightly closed container away from heat, sparks, open flames, strong oxidizing agents and 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.
 Avoid prolonged or repeated exposure.
 Wear butyl 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. No occupational exposure limits have been established.

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VENTILATION: Local or general mechanical ventilation is required.
SKIN PROTECTION: Butyl rubber gloves are highly recommended. When skin protection is possible, protective clothing including gloves, apron, sleeves, boots, head and face protection should be worn.
EYE PROTECTION: Chemical splash goggles and face shield must be worn when possibility exists for eye contact due to splashing/spraying liquid, airborne particles, or vapor.

SECTION 9. PHYSICAL AND CHEMICAL DATA

APPEARANCE: Colorless Liquid
ODOR: Amine-like
BOILING POINT: 202 °C (396 °F)
SPECIFIC GRAVITY: 1.030 @ 25 °C (77 °F)
VAPOR PRESSURE: 0.3 mm Hg @ 20 °C (68 °F)
H₂O SOLUBILITY: Complete
% VOLATILES: 100% by weight
EVAPORATION RATE: 0.03 (BuAc=1)
FLASH POINT: 93 °C (199 °F) TCC
AUTOIGNITION TEMP: 270 °C (518 °F)
EXPLOSION LIMITS: 1.3 lower (vol%)
9.5 upper (vol%)

SECTION 10. REACTIVITY DATA

STABILITY: Stable
INCOMPATIBILITY: Severe oxidizing conditions
HAZARDOUS POLYMERIZATION: Not expected to occur
HAZARDOUS COMBUSTION OR
DECOMPOSITION PRODUCTS: Carbon Monoxide and Nitrogen Oxide fumes emitted when heated to decomposition.

SECTION 11. TOXICITY HAZARDS

ACUTE EFFECTS:
Product is of slight acute toxicity. Liquid NMP is a moderate to severe eye irritant and mildly irritating to skin but is not a skin sensitizer. It is readily absorbed after ingestion, inhalation and skin contact. Repeated inhalation exposure may cause reversible irritation at the site of initial contact, and transient CNS effects have also been observed.

ORAL: LD50(rat): 4150 mg/kg
SKIN: LD50(rat): 7000 mg/kg
INHALATION: LC50(rat): >5.0 mg/L, aerosol, 4 hours

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SECTION 12. ECOLOGICAL DATA

ECOTOXICITY: This material is expected to be non-hazardous to aquatic species.

ENVIRONMENTAL FATE: This material is not expected to persist in the environment. It is water soluble and is expected to have low volatility. It is expected to be poorly adsorbed onto soils or sediments. Hydrolysis is not expected to be an important fate process for this material.

BIOACCUMULATION: BCF=0.16. This material is not expected to bioaccumulate.

BIODEGRADATION: BOD (modified MITI method) = 73% (28 days). BOD (modified MITI method) = 92% (14 days). This material is expected to be readily biodegradable.

SECTION 13. DISPOSAL CONSIDERATIONS

Comply with applicable local, state or international regulations regarding the proper disposal of this material and/or containers.

SECTION 14. TRANSPORTATION INFORMATION

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

SECTION 15. REGULATORY INFORMATION

EUROPEAN INFORMATION

EINECS LISTED

EC Nos: N-Methyl Pyrrolidinone 212-828-1

RISK & SAFETY PHRASES

R36/38 Irritating to eyes and skin
S2 Keep out of the reach of children
S41 In case of fire and/or explosion do not breathe fumes

INDICATIONS OF DANGER

Xi Irritant

US AND INTERNATIONAL INFORMATION

HAZARDOUS LISTINGS: All ingredients appear on the TSCA Inventory of Chemical Substances, EINECS, and the Japan Hazardous Chemical Listing.

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SARA Title III: This material contains the following chemicals with known CAS numbers subject to SARA Title III, Section 313 Reporting Requirements:

N-Methyl Pyrrolidinone (CAS: 872-50-4);
Reporting Threshold: 1.0%

Calif. SCAQMD Rule 443.1 VOC's: 1026 g/l; vapor pressure 0.3 mm Hg @ 20 °C

SECTION 16. ADDITIONAL PRECAUTIONS AND COMMENTS

National Fire Protection Association Hazard Ratings – NFPA:

- 2 Health Hazard Rating
- 1 Flammability Rating
- 0 Reactivity Rating

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.

MSDS Revision Information:

A) Section 1 and Header information: Removed the NANO name from the trade name.