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MATERIAL SAFETY DATA SHEET

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SECTION 1. CHEMICAL IDENTIFICATION

CHEMICAL NAME: Methyl Isobutyl Ketone
TRADE NAME: MIBK
PRODUCT #: Positive Radiation Resist Developer
M080100

SECTION 2. COMPOSITION

HAZARDOUS
INGREDIENTS: Methyl Isobutyl Ketone (CAS: 108-10-1); 100%

SECTION 3. HAZARD DATA

INFLAMMABILITY: Flammable liquid.
SKIN CONTACT: Irritating to the skin causing a burning sensation, redness and /or swelling.
EYE CONTACT: Vapors may be irritating to the eye. Irritating to the eyes causing a burning sensation, redness, swelling and/or blurred vision.
INGESTION: May be harmful if swallowed. Irritating to the gastrointestinal tract.
INHALATION: Vapors may be irritating to respiratory system.
MUTAGENICITY: Not known to be mutagenic.
CARCINOGENICITY: Not known to be carcinogenic.
TARGET ORGANS: Eyes, Skin, Respiratory System, Nervous System.

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.
INGESTION: Contact physician immediately.
DO NOT induce vomiting. Have victim rinse mouth out with water, then drink sips of water to remove taste from mouth. If vomiting occurs, keep head below hips to prevent aspiration. 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 before reuse.
EYE CONTACT: Rinse immediately with water, flush for 15 min. lifting eyelids frequently. Get medical attention immediately.

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SECTION 5. FIRE FIGHTING MEASURES

EXTINGUISHING

MEDIA: Water fog, dry chemical, carbon dioxide, and alcohol foam.

SPECIAL FIRE FIGHTING PRECAUTIONS:

Wear self-contained breathing apparatus (SCBA) and personal protective equipment when exposed to products of combustion.

UNUSUAL FIRE OR EXPLOSION HAZARDS:

Heat will build pressure and may rupture closed containers. Keep containers cool with water spray. Vapor may travel a considerable distance to source of ignition and flash back. This material may produce a floating fire hazard.

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 breathe vapors or dust.

CLEANUP & DISPOSAL OF SPILL:

Absorb with an inert absorbent. Sweep up and place in an appropriate closed container. 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 in a cool environment away from direct sunlight.

HANDLING: Flammable. Keep away from heat, sparks, and flames.
Take precautions against static discharge.
Do not breathe vapors or spray mist.
Use with adequate ventilation.
Do not contact with skin, eyes, and clothing.
Avoid prolonged or repeated exposure.
Wear chemical resistant (butyl or polyvinyl alcohol) 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: Use NIOSH approved respirator when ventilation is inadequate.
VENTILATION: Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits.
SKIN PROTECTION: Use protective clothing that is chemical resistant to this material. Chemical resistant gloves (butyl or Polyvinyl Alcohol).
EYE PROTECTION: Tightly fitting safety goggles are highly recommended, or Safety glasses.

SECTION 9. PHYSICAL AND CHEMICAL DATA

APPEARANCE: Clear colorless liquid
ODOR: Pleasant
BOILING POINT: 116 °C (240 °F)
SPECIFIC GRAVITY: 0.80
VAPOR PRESSURE: 14.5 mmHg @ 20 °C (68 °F)
VAPOR DENSITY: 3.5 (air=1)
H₂O SOLUBILITY: Moderate
% VOLATILES: 100% by wt
EVAPORATION RATE: 1.6 (BuAc=1)
FLASH POINT: 16°C (61°F) TCC
AUTOIGNITION TEMP: 460°C (860°F)
EXPLOSION LIMITS: 1.2% lower (vol/vol%)
8% upper

SECTION 10. REACTIVITY DATA

STABILITY: Stable
INCOMPATIBILITY: Strong Acids, Strong Bases, Strong Oxidizing Agents.
HAZARDOUS POLYMERIZATION: Will not occur
HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS: Carbon Monoxide, Carbon Dioxide and other organic compounds.

SECTION 11. TOXICITY HAZARDS

ORAL: LD50 (Rat) 2080 mg/kg
DERMAL: LD50 (Rabbit) >20 ml/kg
INHALATION: LC50 (Rat) 2000-4000 ppm (v) 6 hours

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TLV: ACGIH (TWA) 50 ppm; STEL 75 ppm

PEL: OSHA (8hr TWA) 100 ppm

Other Information: MIBK may shorten the time of onset of liver and kidney toxicity of haloalkane solvents and peripheral neuropathy caused by materials such as n-hexane or methyl n-butyl ketone. However, MIBK alone has not been shown to cause peripheral neuropathy.

SECTION 12. ECOLOGICAL DATA

No data available at this time

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: Flammable Liquid
SHIPPING NAME: Methyl Isobutyl Ketone
UN NUMBER: UN 1245
PACKING GROUP: II

SECTION 15. REGULATORY INFORMATION

EUROPEAN INFORMATION

EINECS LISTED

EC Nos: Methyl Isobutyl Ketone 203-550-1

RISK & SAFETY PHRASES

R11 Highly flammable
R20 Harmful by inhalation
R36/37 Irritating to eyes and respiratory system
R66 Repeated exposure may cause skin dryness or cracking
S2 Keep out of the reach of children
S9 Keep container in a well-ventilated place
S16 Keep away from sources of ignition – No smoking
S29 Do not empty into drains

INDICATIONS OF DANGER

F Flammable
Xn Harmful

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US AND INTERNATIONAL INFORMATION

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

SARA Title III: This product IS subject to SARA Title III, Section 313 Reporting Requirements as methyl isobutyl ketone.

CERCLA Reportable Quantity: 5,000 lbs.

Calif. SCAQMD Rule 443.1 VOC's: 800 g/l; vapor pressure 14.5 mm Hg @ 20 °C (68 °F)

SECTION 16. ADDITIONAL PRECAUTIONS AND COMMENTS

National Fire Protection Association Hazard Ratings – NFPA:

- 2 Health Hazard Rating
- 3 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) Removed "NANO" name from trade name.
- B) General update of MSDS. Added European Risk and Safety phrases to Section 15.