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## MATERIAL SAFETY DATA SHEET

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### SECTION 1. CHEMICAL IDENTIFICATION -----

CHEMICAL NAME: Organic Solvent Mixture  
TRADE NAME: MIBK/IPA Series  
Positive Radiation Resist Developers  
PRODUCT #: See Table 1 - Section 9

### SECTION 2. COMPOSITION-----

HAZARDOUS  
INGREDIENTS: Isopropyl Alcohol (CAS: 67-63-0): 20-80%  
(Synonyms: Isopropanol, 2-propanol)  
Methyl Isobutyl Ketone (CAS: 108-10-1): 20-80%

### 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. Contact physician immediately.  
INGESTION: 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**

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**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**

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**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**

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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:** Alcoholic Ketone  
**BOILING POINT:** 82-116 °C (179-240 °F)  
**SPECIFIC GRAVITY:** See Table 1 below  
**VAPOR PRESSURE:** 14.5-30 mm @ 20 °C (68 °F)  
**VAPOR DENSITY:** 2.2-3.5 (air=1)  
**H<sub>2</sub>O SOLUBILITY:** 70% @ 20 °C, by wt.  
**% VOLATILES:** See Table 1 below  
**EVAPORATION RATE:** 1.6-2.3 (BuAc=1)  
**FLASH POINT:** 12-16°C (53-61°F) TCC  
**AUTOIGNITION TEMP:** 456°C (852°F)  
**EXPLOSION LIMITS:** 1.2% lower  
 12% upper

**Table 1**

Name	Product #	Specific Gravity	Volatiles (% by wt)	VOC (g/L)
M/I 1:4	M089020	0.788	100	788
M/I 1:3	M089025	0.789	100	789
M/I 1:2	M089033	0.790	100	790
M/I 1:1	M089050	0.793	100	793
M/I 2:1	M089067	0.795	100	795
M/I 3:1	M089075	0.796	100	796
M/I 4:1	M089080	0.797	100	797

**SECTION 10. REACTIVITY DATA**

**STABILITY:** Stable  
**INCOMPATIBILITY:** Strong Acids, Strong Bases, Strong Oxidizing Agents, Caustics, Amines, Alkanolamines, Aldehydes, Chlorinated compounds.

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HAZARDOUS POLYMERIZATION: Will not occur  
 HAZARDOUS COMBUSTION OR  
 DECOMPOSITION PRODUCTS: Carbon Monoxide, Carbon Dioxide and other organic  
 compounds.

**SECTION 11. TOXICITY HAZARDS**

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As Methyl Isobutyl Ketone:

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

As Isopropyl Alcohol:

ORAL:	LD50 (Rat)	5045 mg/kg
	LD lo (Human)	3570 mg/kg
DERMAL:	LD50 (Rabbit)	12,800 mg/kg
TLV:	ACGIH (TWA)	400 ppm; STEL 500 ppm
PEL:	OSHA (8hr TWA)	400 ppm

**SECTION 12. ECOLOGICAL DATA**

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No data available at this time

**SECTION 13. DISPOSAL CONSIDERATIONS**

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

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**SECTION 14. TRANSPORTATION INFORMATION**

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HAZARD CLASSIFICATION: Flammable Liquid  
SHIPPING NAME: Flammable Liquid, NOS (Isopropanol, Methyl Isobutyl  
Ketone mixture)  
UN NUMBER: UN 1993

**SECTION 15. REGULATORY INFORMATION**

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**EUROPEAN INFORMATION**

**EINECS LISTED**

EC Nos: Methyl Isobutyl Ketone 203-550-1; Isopropyl Alcohol 200-661-7

**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  
R67 Vapours may cause drowsiness and dizziness  
S2 Keep out of the reach of children  
S7 Keep container tightly closed  
S9 Keep container in a well-ventilated place  
S16 Keep away from sources of ignition – No smoking  
S24/25 Avoid contact with skin and eyes  
S26 In case of contact with eyes, rinse immediately with plenty of water and seek  
medical advice  
S29 Do not empty into drains

**INDICATIONS OF DANGER**

F Flammable  
Xi Irritant  
Xn Harmful

**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: 20,000 lbs.  
(5,000 lbs as methyl isobutyl ketone @20-80%)

Calif. SCAQMD Rule 443.1 VOC's: See Table 1 - Section 9

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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.