

## Section 1 Chemical Product and Company Identification

**Product Identifier** MiraMag® Photoresist-RT

**General Use** Developing images on pre-sensitized metal

**Company** UEI Systems®, a UEI Group Company

**Address** 9090 Nieman Road  
Overland Park, KS 66214 USA

**Phone** +1 800 221 9059 or +1 913 541 0503

**Emergency Contact Number** CHEMTEL – Available 24 hours/day, 7 days/week  
Domestic North America: +1 800 255 3924  
International: +1 813 248 0585

## Section 2 Hazards Identification

### GHS Classification

Hazard Class	Hazard Category	Route of Exposure
Flammable liquids	3	–
Acute toxicity, oral	4	–
Acute toxicity, dermal	4	–
Acute toxicity, inhalation	4	–
Eye damage/irritation	2A	–
Skin sensitization	1	–
Carcinogenicity	2	–
Toxic to reproduction, fertility	1B	–
Toxic to reproduction, unborn child	1B	–
Aquatic hazard, acute	3	–
Aquatic hazard, long-term	3	–

### GHS Labeling



**Danger**

**Hazard Statements** Flammable liquid and vapor  
Harmful if swallowed, in contact with skin or if inhaled  
Causes serious eye irritation  
May cause an allergic skin reaction  
May damage fertility or the unborn child  
Suspected of causing cancer  
Harmful to aquatic life with long lasting effects

## Section 2 Hazards Identification, continued

<b>Precautionary Statements</b>	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves. Wear eye or face protection. Wear protective clothing. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Avoid breathing vapor. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace.
<b>Response</b>	<p><b>IF exposed or concerned:</b> Get medical attention.</p> <p><b>If inhaled:</b> Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell.</p> <p><b>If swallowed:</b> Call a POISON CENTER or physician if you feel unwell. Rinse mouth.</p> <p><b>If on skin (or hair):</b> Take off immediately all contaminated clothing. Rinse skin with water or shower.</p> <p><b>If on skin:</b> Call a POISON CENTER or physician if you feel unwell. If skin irritation or rash occurs: Get medical attention.</p> <p><b>If in eyes:</b> Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.</p>

## Section 3 Hazardous Ingredients / Identity Information

Hazardous Components	CAS No.	%
2-ethoxyethyl acetate	111-15-9	60–70%
Antioxidant	–	0.1–1.0%

## Section 4 First Aid Measures

	<b>In all cases, call a physician immediately.</b>
<b>Eye Contact</b>	Check for and remove any contact lenses. Get medical attention. Immediately flush eyes with running water for at least 30 minutes, keeping eyelids open. Provide a readily accessible eyewash facility and quick-drench safety shower.
<b>Skin Contact</b>	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 15 minutes. Get medical attention. Wash contaminated clothing before reuse. Clean shoes thoroughly before reuse. In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
<b>Inhalation</b>	Get medical attention immediately. Move exposed person to fresh air. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

## Section 4 First Aid Measures, continued

<b>Ingestion</b>	Get medical attention immediately. Wash out mouth with water. Remove dentures if any. Move exposed person to fresh air. Keep person warm and at rest. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel.
<b>Protection of First-Aid Responders</b>	No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wear suitable protective clothing, gloves and eye/face protection. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

## Section 5 Firefighting Measures

<b>Flammability of the Product</b>	Flammable liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard.
<b>EXTINGUISHING MEDIA</b>	
<b>Suitable</b>	Use dry chemical, CO <sub>2</sub> , water spray (fog) or foam
<b>Not Suitable</b>	Do not use water jet
<b>Special Exposure Hazards</b>	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
<b>Hazardous Combustion Products</b>	Carbon Oxides, Nitrogen oxides
<b>Special Protective Equipment for Firefighters</b>	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

## Section 6 Accidental Release Measures

<b>Personal Precautions</b>	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).
<b>Environmental Precautions</b>	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
<b>Small spill</b>	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

## Section 6 Accidental Release Measures, continued

**Large spill** Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and Section 13 for waste disposal.

## Section 7 Handling and Storage

**Handling** Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Avoid exposure during pregnancy. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Keep in the original container or approved alternative container. Containers should be kept closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

**Storage** Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

## Section 8 Component Exposure Limits

Hazardous Components	ACGIH TLV (TWA)	NIOSH REL (TWA)	OSHA PEL (TWA)
2-ethoxyethyl acetate	5 ppm 8 hours 27 mg/m <sup>3</sup> 8 hours	0.5 ppm 10 hours 2.7 mg/m <sup>3</sup> 10 hours	100 ppm 8 hours 540 mg/m <sup>3</sup> 8 hours
Antioxidant	skin sensitizer		

**Notes:** 1996 Adoption Substances for which the TLV is higher than the OSHA Permissible Exposure Limit (PEL) and/or the NIOSH Recommended Exposure Limit (REL). See CFR 58(124) : 36338-33351, June 30, 1993, for revised OSHA PEL. Refers to Appendix A -- Carcinogens. TWA: 1 mg/m<sup>3</sup> 8 hours. NIOSH REL (United States, 10/2013). CEIL: 2 mg/m<sup>3</sup> 15 minutes. OSHA PEL (United States, 2/2013). TWA: 2 mg/m<sup>3</sup> 8 hours

## Section 8 Component Exposure Limits, continued

<b>Appropriate engineering controls</b>	Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment. Processes should be designed to minimize airborne and skin exposure to hazardous substances.
<b>Hygiene Measures</b>	Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Remove/Take off immediately all contaminated clothing. Contaminated work clothing should not be allowed out of the workplace.
<b>PERSONAL PROTECTION</b>	
<b>Respiratory</b>	Use a properly fitted, air-purifying or air-fed respirator complying with NIOSH if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Risk assessments should be completed by a Certified Industrial Hygienist.
<b>Hands</b>	Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. The user must check that the final choice of type of glove selected for handling this product is the most appropriate and takes into account the particular conditions of use, as included in the user's risk assessment. Risk assessments should be completed by a Certified Industrial Hygienist.
<b>Eyes</b>	Avoid contact with eyes. Safety eye wear should be used when there is a likelihood of exposure. Use safety eye wear designed to protect against splash of liquids.
<b>Skin</b>	Avoid contact with skin and clothing. Wear protective clothing. Body garments used should be based upon the task being performed (e.g., lab coat, chemical resistant protective suit, sleevelets, synthetic apron, gauntlets) to avoid exposed skin surfaces. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.
<b>Environmental Exposure Controls</b>	Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

## Section 9 Physical and Chemical Properties

Physical State	Liquid	Boiling/Condensation Point	No data
Auto-ignition Temperature	No data	Vapor Pressure	No data
Color	Opaque red	Odor Threshold	No data
pH	No data	VOC	979.3 g/l
Melting/Freezing Point	No data	Viscosity	No data
Vapor Density	No data	Decomposition Temperature	No data
Evaporation Rate	No data	Partition coefficient n-octanol	No data
Solubility	Insoluble in cold and hot water	Flammable Limits	No data
Flash point	Closed cup: 48.889°C (120°F)	Odor	Characteristic

## Section 10 Chemical Stability and Reactivity

Stability	The product is stable.
Conditions to Avoid	Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat sources of ignition.
Incompatibility with Various Sources	Extremely reactive or incompatible with the following materials: oxidizing materials, reducing materials, combustible materials, organic materials, acids, alkalis and moisture.
Hazardous Decomposition Products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Other Hazardous Decomposition Products	Carbon oxides
Hazardous polymerization	Under normal conditions of storage and use, hazardous polymerization will not occur.

## Section 11 Toxicological Information

### ACUTE TOXICITY

Product /Ingredient Name	Result	Species	Dose
2-ethoxyethyl acetate	LD50 Oral	Rat	2700 mg/kg
Antioxidant	LD50 Dermal LD50 Oral	Mammal Rat	5970 mg/kg 302 mg/kg

### IRRITATION CORROSION

Product /Ingredient Name	Result	Species	Exposure
2-ethoxyethyl acetate	Eyes - Moderate irritant Skin - Mild irritant	Rabbit Rabbit	40 milligrams 490 milligrams
Antioxidant	Skin - Mild irritant Skin - Severe irritant	Human Human	2 percent 5 percent

Respiratory or Skin Sensitization No data available

### Germ Cell Mutagenicity

Product /Ingredient Name	Experiment	Result
Antioxidant	Experiment: In vitro Subject: Mammalian-Human Cell: Somatic	Positive
	Subject: Mammalian-Animal Cell: Somatic	Positive

## Section 11 Toxicological Information, continued

### CARCINOGENICITY

Product /Ingredient Name	OSHA	IARC	NTP
Antioxidant	–	3	–

Reproductive Toxicity No data available

Specific Target Organ Toxicity  
Single Exposure No data available

Specific Target Organ Toxicity  
Repeated Exposure No data available

Aspiration Hazard No data available

Likely Routes of Exposure No data available

### POTENTIAL ACUTE HEALTH EFFECTS

Eye Contact Causes serious eye irritation

Inhalation Harmful if inhaled

Skin Contact Harmful in contact with skin. May cause an allergic skin reaction.

Ingestion Harmful if swallowed

### SYMPTOMS RELATED TO THE PHYSICAL, CHEMICAL AND TOXICOLOGICAL CHARACTERISTICS

Eye contact Adverse symptoms may include the following: pain or irritation, watering, redness

Inhalation Adverse symptoms may include the following: reduced fetal weight, increase in fetal deaths, skeletal malformations

Skin contact Adverse symptoms may include the following: irritation, redness, reduced fetal weight, increase in fetal deaths, skeletal malformations

Ingestion Adverse symptoms may include the following: reduced fetal weight, increase in fetal deaths, skeletal malformations

## Section 12 Ecological Information

### TOXICITY

Toxicity to Daphnia and Other  
Aquatic Vertebrae

Acute LC50: > 40,000 µg/l (Fish (*Menidia beryllina*), 96 h)  
Acute LC50: > 162 mg/l (Water flea (*Daphnia pulicaria*), 48 h)  
Acute LC50: > 44 µg/l (Fish (*Oncorhynchus mykiss*), 96 h)

Persistence/Degradability No data available

Bioaccumulative Potential No data available

Mobility in Soil No data available

Results of PBT and  
vPvB Assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

Other Adverse Effects No known significant effects or critical hazards.



## Section 13 Disposal Considerations

**Waste Disposal:** The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations. Refer to Section 7: Handling and Storage and Section 8: Exposure Controls Personal Protection for additional handling information and protection of employees.

## Section 14 Transportation Information

Regulatory Information	UN number	Proper Shipping Name	Classes	PG* Label	Additional Information
DOT Classification	UN1172	Ethylene glycol monoethyl ether acetate solution	3	III	ERG# 129

PG\*: Packing group

## Section 15 Regulatory Information

### Component Analysis – State

#### SARA 302 Components

**SARA 302** No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

#### SARA 313 Components

**SARA 313** This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

**SARA 311/312 Hazards** Fire Hazard, Acute Health Hazard, Chronic Health Hazard

	Right To Know Components	CAS-No	Revision Date
Massachusetts	2-ethoxyethyl acetate	111-15-9	1993-04-24
Pennsylvania	2-ethoxyethyl acetate	111-15-9	1993-04-24
New Jersey	2-ethoxyethyl acetate	111-15-9	1993-04-24
California Prop 65	This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.		



## Section 16

## Other Information

UEI Systems® provides the information contained herein in good faith. It is believed to be correct. However it is not all-inclusive and should be used only as a guide. Individuals receiving this information must exercise their independent judgement in determining its appropriateness for a particular purpose. UEI Systems shall not be held liable for any damage resulting from handling or from contact with this product. All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources.

**Abbreviations**    **PEL**   Permissible Exposure Limit  
                         **TLV**   Threshold Limit Value

**End Notes**

1. SARA - Signed into law in 1986, the Superfund Amendments and Reauthorization Act (SARA) is an extension of CERCLA, and is intended to encourage and support local and state emergency planning efforts. SARA provides citizens and local governments with information about potential chemical hazards, and calls for facilities that store hazardous materials to provide officials and citizens with data on the type and amount on hand at specific locations. This field states whether a material is listed or not listed in section 372.65 of SARA. EHS - This states if a material is listed or not listed in Appendix B to part 355, the SARA Extremely Hazardous Substances (EHS) section. RQ is the reportable quantity. TPQ is the Threshold Planning Quantity.
2. RCRA - The Resource Conservation and Recovery Act enacted in 1976 and subsequently amended, controls solid-waste disposal and encourages recycling. This states whether a material is listed or not listed under this regulation. If listed the Hazardous Waste Number and waste characterization assigned by RCRA is also provided.
3. CERCLA - Enacted in 1980 and amended thereafter, the Comprehensive Environmental Response, Compensation, and Liability Act provides for identification and cleanup of hazardous materials released on land, into the air, waterways, and groundwater. It covers areas affected by newly released materials and older leaking or abandoned dump sites. This states whether a material is listed or not listed in CERCLA Table 302.4. If listed the section(s) that it is listed under and the Reportable Quantity (RQ) are also provided.
4. TSCA - The Toxic Substances Control Act controls the exposure to and use of raw industrial chemicals not subject to other laws. This states whether the chemical is listed or not listed under this regulation.

**Evidence**        <http://toxnet.nlm.nih.gov/>

**Revision**        27 April 2020

**Supersedes**     13 February 2017