



Material Safety Data Sheet

1. PRODUCT AND COMPANY IDENTIFICATION

KL IR Lift-Off Series PhotoResist

Negative Profile Image Reversal Photoresist

Revision Date: 01/01/2024

Supplier:

KemLab
254 W Cummings Park
Woburn, MA 01801

For non-emergency information contact: 781-281-0174

Emergency telephone, PERS-ER US/Canada: 1-800-633-8253
International: 1-801-629-0667

2. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No.	Concentration
Electronic grade propylene glycol monomethyl ether acetate	108-65-6	> 70.0 %
Mixed cresol novolak resin		< 30.0 %
Diazo Photoactive Compound		< 6.0 %
Proprietary Additives		< 5.0 %
Cresol	1319-77-3	< 0.5 %

3. HAZARDS IDENTIFICATION

Emergency Overview

Appearance

Form liquid
Color Red Amber
Odor ester-like

Hazard Summary

CAUTION!

Combustible liquid and vapor. Causes irritation to eyes, nose, and respiratory tract.
Prolonged, repeated contact, inhalation, ingestion, or absorption through the skin, may cause adverse effects to internal organ systems.

Potential Health Effects

Primary Routes of Entry: Inhalation, ingestion, eye and skin contact, absorption.

Eyes: May cause pain, transient irritation and superficial corneal effects.

Skin: Material may cause irritation.

Prolonged or repeated exposure may have the following effects:

drowsiness

defatting and drying of the skin which can lead to irritation and dermatitis

central nervous system depression

kidney damage

liver damage

Ingestion: Swallowing may have the following effects:

irritation of mouth, throat and digestive tract

headache

nausea

vomiting

Repeated doses may have the following effects:

central nervous system depression

liver damage

kidney damage

Inhalation: Inhalation may have the following effects:

irritation of nose, throat and respiratory tract

Higher concentrations may have the following effects:

systemic effects similar to those resulting from ingestion

Target Organs: Eye

Respiratory System

Nervous System

Liver

Kidney

Skin

Carcinogenicity

Not considered carcinogenic by NTP, IARC, and OSHA

4. FIRST AID MEASURES

Inhalation: Remove from exposure. If there is difficulty in breathing, give oxygen. Seek medical attention if symptoms persist.

Skin contact: Wash skin with water. Continue washing for at least 15 minutes. Obtain medical attention if blistering occurs or redness persists.

Eye contact: Immediately flush the eye with plenty of water for at least 15 minutes, holding the eye open. Obtain medical attention if soreness or redness persists.

Ingestion: Wash out mouth with water. Have victim drink 1-3 glasses of water to dilute stomach contents. Induce vomiting if person is conscious. Immediate medical attention is required. Never administer anything by mouth if a victim is losing consciousness, is unconscious or is convulsing.

Notes to physician: Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Flash point ca.40 - 46 °C (104 - 115.00 °F)

Suitable extinguishing media: Use water spray, foam, dry chemical or carbon dioxide. Keep containers and surroundings cool with water spray.

Specific hazards during fire fighting: This product may give rise to hazardous vapors in a fire. Vapors can travel a considerable distance to a source of ignition and result in flashback.

Special protective equipment for fire-fighters: Wear full protective clothing and self-contained breathing apparatus.

Further information: Pressure may build up in closed containers with possible liberation of combustible vapors.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Wear suitable protective clothing.
Wear respiratory protection.
Eliminate all ignition sources.

Environmental precautions

Prevent the material from entering drains or water courses.
Do not discharge directly to a water source.
Advise Authorities if spillage has entered watercourse or sewer or has contaminated soil or vegetation.

Methods for cleaning up

Contain spills immediately with inert materials (e.g., sand, earth).
Transfer into suitable containers for recovery or disposal.
Finally flush area with plenty of water.

7. HANDLING AND STORAGE

Handling

Use local exhaust ventilation. Avoid contact with eyes, skin and clothing. Keep container tightly closed.

Storage

Storage conditions: Store in original container. Keep away from heat and sources of ignition. Storage area should be: cool, dry, well ventilated, out of direct sunlight

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limit(s)

Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value
Electronic grade propylene glycol monomethyl ether acetate	Rohm and Haas	TWA	30 ppm
	Rohm and Haas	STEL	90 ppm
	Rohm and Haas WEEL	Absorbed via skin TWA	50 ppm

Component	Regulation	Type of listing	Value
Cresol	ACGIH	TWA	5 ppm
	ACGIH	SKIN_DES	
	OSHA_TRANS	PEL	22 mg/m3 5 ppm
	OSHA_TRANS	SKIN_DES	
	Z1A	TWA	22 mg/m3 5 ppm
	Z1A	SKIN_FINAL	

Eye protection: Goggles

Hand protection: Butyl rubber gloves. Other chemical resistant gloves may be recommended by your safety professional.

Skin and body protection: Normal work wear.

Respiratory protection: Respiratory protection if there is a risk of exposure to high vapor concentrations. The specific respirator selected must be based on the airborne concentration found in the workplace and must not exceed the working limits of the respirator.

Engineering measures: Engineering methods to prevent or control exposure are preferred. Methods include process or personnel enclosure, mechanical ventilation (local exhaust), and control of process conditions.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	liquid
Colour	Red Amber
Odour	ester-like
pH	neutral
Boiling point/boiling range	ca.146 °C (295.00 °F)
Flash point	ca.40 - 46 °C (104 - 115.00 °F)

Component: **Electronic grade propylene glycol monomethyl ether acetate**

Vapour pressure 3.7 mmHg at 20 °C (68 °F)

Relative vapour density	Heavier than air
Water solubility	insoluble
Relative density	ca.1.07
Evaporation rate	Slower than ether
VOC's	600-800g/l

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Hazardous reactions	Stable under normal conditions
Conditions to avoid	Exposure to sunlight. Heat, flames and sparks. contact with incompatible materials
Materials to avoid	Oxidizing agents
Hazardous decomposition products	Combustion will generate:, oxides of carbon, nitrogen oxides (NOx), phenols, Hydrogen fluoride, Aldehydes, acrid smoke and irritating fumes
polymerization	Will not occur

11. TOXICOLOGICAL INFORMATION

Toxicological information on this product or its components appear in this section when such data is available.

Component: **Electronic grade propylene glycol monomethyl ether acetate**

Acute oral toxicity LD50 rat 8,532 mg/kg

Component: **Cresol**

Acute oral toxicity LD50 rat 1,454 mg/kg

Component: **Electronic grade propylene glycol monomethyl ether acetate**

Acute inhalation toxicity LC50 rat 6 h 23.49 mg/l

Component: **Electronic grade propylene glycol monomethyl ether acetate**

Acute dermal toxicity LD50 rabbit >5,000 mg/kg

Component: **Cresol**

Acute dermal toxicity LD50 rabbit 2,000 mg/kg

Component: **Cresol**

Skin irritation rabbit Corrosive

Component: **Cresol**

Eye irritation rabbit Corrosive

Component: **Electronic grade propylene glycol monomethyl ether acetate**

Toxicity to reproduction

Dermal teratology testing of this solvent (with less than 3% beta isomer) revealed no maternally toxic, teratogenic or fetotoxic responses in rats or rabbits exposed to concentrations of 1,000 and 2,000 mg/kg per day.

Component: **Electronic grade propylene glycol monomethyl ether acetate**

Mutagenicity

No significant mutagenic response was observed and the carcinogenic potential of the material is therefore considered to be low.

Component: **Cresol**

Teratogenicity

Developmental effects were seen in laboratory animals only at dose levels that were maternally toxic.

Component: **Cresol**

Mutagenicity

Not mutagenic in Ames Test. In vitro tests showed mutagenic effects

12. ECOLOGICAL INFORMATION

Ecotoxicological information on this product or its components appear in this section when such data is available.

Electronic grade propylene glycol monomethyl ether acetate

Ecotoxicity effects

Toxicity to fish LC50 Fathead minnow (Pimephales promelas) 96 h
161 mg/l

Toxicity to aquatic invertebrates EC50 Daphnia magna 48 h
>500 mg/l

Cresol

Ecotoxicity effects

Toxicity to fish LC50 Zebra fish (Danio/Brachydanio rerio) 96 h
9 mg/l

Toxicity to fish LC50 Bluegill sunfish (Lepomis macrochirus) 96 h
10 mg/l

Toxicity to bacteria EC0 Pseudomonas putida 0.5 h
250 mg/l

13. DISPOSAL CONSIDERATIONS

Environmental precautions: Prevent the material from entering drains or water courses. Do not discharge directly to a water source. Advise Authorities if spillage has entered watercourse or sewer or has contaminated soil or vegetation.

Disposal

Dispose in accordance with all local, state (provincial), and federal regulations. Incineration is the recommended method of disposal for containers. Under RCRA, it is the responsibility of the product's user to determine at the time of disposal, whether the product meets RCRA criteria for hazardous waste. This is because the product uses, transformations, mixtures, processes, etc. may render the resulting materials hazardous.

Do not remove label until container is thoroughly cleaned. Empty containers may contain hazardous residues. This material and its container must be disposed of in a safe way.

14. TRANSPORT INFORMATION

DOT

Not regulated per 49CFR 173.150(f)(2)

IMO/IMDG

Proper shipping name	RESIN SOLUTION
UN-Number	UN 1866
Class	3
Packing group	III

Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations

15. REGULATORY INFORMATION

SARA TITLE III: Section 311/312 Categorizations (40CFR370): Immediate, delayed, flammability hazard

SARA TITLE III: Section 313 Information (40CFR372)

This product does not contain a chemical which is listed in Section 313 at or above de minimis concentrations.

US. Toxic Substances Control Act (TSCA): All components of this product are in compliance with the inventory listing requirements of the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

California (Proposition 65)

This product does not contain materials which the State of California has found to cause cancer, birth defects or other reproductive harm.

16. OTHER INFORMATION

Hazard Rating

	Health	Fire	Reactivity
NFPA	2	2	0

Legend

ACGIH	American Conference of Governmental Industrial Hygienists
BAC	Butyl acetate
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
STEL	Short Term Exposure Limit (STEL):
TLV	Threshold Limit Value
TWA	Time Weighted Average (TWA):

	Bar denotes a revision from prior MSDS.
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The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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