

1 Identification of the substance/mixture and of the company

- **Product identifier**
- **Trade name:** PermiNex™ 1000 Series Resists
- **Product number:** Y514020, Y514046, Y514058, Y514062
- **Application of the substance / the mixture** Photoresist
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
MicroChem Corp.
200 Flanders Road
Westborough, MA 01581 USA
- **Information department:**
Product Safety
Email: productsafety@microchem.com
- **Emergency telephone number:**
MicroChem Corp : 617-965-5511
Chemtrec USA Emergency : 800-424-9300
Chemtrec International Emergency : 703-527-3887

2 Hazard(s) identification

- **Classification of the substance or mixture**



GHS02 Flame

Flam. Liq. 3 H226 Flammable liquid and vapor.



GHS08 Health hazard

Muta. 2 H341 Suspected of causing genetic defects.



GHS09 Environment

Aquatic Chronic 2 H411 Toxic to aquatic life with long lasting effects.



GHS07

Skin Irrit. 2 H315 Causes skin irritation.
 Eye Irrit. 2A H319 Causes serious eye irritation.
 Skin Sens. 1 H317 May cause an allergic skin reaction.

- **Label elements**
- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms**



GHS02



GHS07



GHS08



GHS09

Trade name: PermiNex™ 1000 Series Resists

(Contd. of page 1)

· **Signal word** Warning· **Hazard-determining components of labeling:**

Epoxy Resin M3

[3-(2,3-epoxypropoxy)propyl]trimethoxysilane

Epoxy Resin M2

· **Hazard statements**

H226 Flammable liquid and vapor.

H315 Causes skin irritation.

H319 Causes serious eye irritation.

H317 May cause an allergic skin reaction.

H341 Suspected of causing genetic defects.

H411 Toxic to aquatic life with long lasting effects.

· **Precautionary statements**

P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.

P261 Avoid breathing dust/fume/gas/mist/vapors/spray

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P273 Avoid release to the environment.

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.

P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P304+P312 IF INHALED: Call a POISON CENTER/doctor if you feel unwell.

P333+P313 If skin irritation or rash occurs: Get medical advice/attention.

P337+P313 If eye irritation persists: Get medical advice/attention.

P370+P378 In case of fire: Use for extinction: Alcohol resistant foam.

P370+P378 In case of fire: Use for extinction: Fire-extinguishing powder.

P370+P378 In case of fire: Use for extinction: Carbon dioxide.

P302+P352 IF ON SKIN: Wash with plenty of soap and water.

P403+P235 Store in a well-ventilated place. Keep cool.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Additional information:**

55.6 % of the mixture consists of component(s) of unknown toxicity.

· **Classification system:**· **NFPA ratings (scale 0 - 4)**

Health = 1

Fire = 3

Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**

Health = 1

Fire = 3

Reactivity = 0

· **Other hazards**· **Results of PBT and vPvB assessment**· **PBT:** Not applicable.· **vPvB:** Not applicable.

US

(Contd. on page 3)

Trade name: PermiNex™ 1000 Series Resists

(Contd. of page 2)

3 Composition/information on ingredients

- **Chemical characterization: Mixtures**
- **Description:** Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components:**

	Epoxy Resin M3 ⚠ Aquatic Chronic 2, H411; ⚠ Skin Irrit. 2, H315; Eye Irrit. 2A, H319; Skin Sens. 1, H317	40-60%
	Epoxy Resin M2 ⚠ Aquatic Chronic 2, H411; ⚠ Skin Irrit. 2, H315; Eye Irrit. 2A, H319; Skin Sens. 1, H317	25-50%
120-92-3	Cyclopentanone ⚠ Flam. Liq. 3, H226; ⚠ Acute Tox. 4, H302; Acute Tox. 4, H332; Skin Irrit. 2, H315; Eye Irrit. 2, H319	10-25%
2530-83-8	[3-(2,3-epoxypropoxy)propyl]trimethoxysilane ⚠ Muta. 2, H341; ⚠ Eye Dam. 1, H318; Aquatic Chronic 3, H412	1-5%
	Proprietary Quencher ⚠ Acute Tox. 4, H302; Skin Irrit. 2, H315; Eye Irrit. 2A, H319; STOT SE 3, H335; Aquatic Chronic 3, H412	1-5%
· Additional Components:		
	Proprietary Photoacid Generator	1-5%

4 First-aid measures

- **Description of first aid measures**
- **General information:** Immediately remove any clothing soiled by the product.
- **After inhalation:**
Inhalation is not an expected route of exposure. If respiratory irritation or distress occurs remove victim to fresh air. Seek medical attention if respiratory irritation or distress continues.
- **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
- **After eye contact:**
Wash eyes immediately with a large amount of water or normal saline, occassionally lifting upper and lower eye lids until no evidence of chemical remains (at least 20 minutes). Remove contact lenses if present and easy to remove. Seek immediate medical attention.
- **After swallowing:**
Do not induce vomiting unless instructed to do so by a physician. Wash out mouth with water and keep person at rest. Seek immediate medical attention.
- **Information for doctor:**
- **Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed** Treat symptomatically.

5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:**
Alcohol resistant foam
Fire-extinguishing powder
ABC powder
- **For safety reasons unsuitable extinguishing agents:**
Water with full jet
Water
- **Special hazards arising from the substance or mixture** No further relevant information available.

(Contd. on page 4)

Trade name: PermiNex™ 1000 Series Resists

(Contd. of page 3)

- **Advice for firefighters**
- **Protective equipment:** Wear SCBA.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation
Keep away from ignition sources
- **Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
- **Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Ensure adequate ventilation.
Do not flush with water or aqueous cleansing agents
- **Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

- **Handling:**
- **Precautions for safe handling**
Ensure good ventilation/exhaust at the workplace.
Prevent formation of aerosols.
- **Information about protection against explosions and fires:**
Keep ignition sources away - Do not smoke.
Protect against electrostatic charges.
Use explosion-proof apparatus / fittings and spark-proof tools.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and containers:**
No special requirements.
Due to photo-sensitivity, store product in brown-glass or stainless steel receptacles.
- **Information about storage in one common storage facility:**
Do not store together with oxidizing and acidic materials.
Do not store together with alkalis (caustic solutions).
- **Further information about storage conditions:**
Keep container well-sealed in cool, dry location.
Protect from heat and direct sunlight.
Store receptacle in a well ventilated area.
- **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.

(Contd. on page 5)

Trade name: PermiNex™ 1000 Series Resists

(Contd. of page 4)

· Control parameters

· Components with limit values that require monitoring at the workplace:

2530-83-8 [3-(2,3-epoxypropoxy)propyl]trimethoxysilane

TWA Short-term value: 200 mg/m³

· Additional information: The lists that were valid during the creation were used as basis.

· Exposure controls

· Personal protective equipment:

· General protective and hygienic measures:

Keep away from food and beverages.

Immediately remove all soiled and contaminated clothing.

Wash hands before breaks and at the end of work.

Avoid contact with the eyes and skin.

· Respiratory equipment:

In case of low exposure, use cartridge respirator. In case of intensive or longer exposure, use SCBA.

· Protection of hands:



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

· Material of gloves Nitrile rubber, NBR

· Penetration time of glove material Contact glove manufacture for break-through time.

· Eye protection:



Tightly sealed goggles

9 Physical and chemical properties

· Information on basic physical and chemical properties

· General Information

· Appearance:

Form:	Fluid
Color:	Clear to light yellow
Odor:	Ethereal
Odor threshold:	Not determined.

· pH-value: Not determined.

· Change in condition

Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	130 °C (266 °F)

· Flash point: 30 °C (86 °F)

· Flammability (solid, gaseous): Not applicable.

· Ignition temperature: 430 °C (806 °F)

· Decomposition temperature: Not determined.

(Contd. on page 6)

Trade name: PermiNex™ 1000 Series Resists

(Contd. of page 5)

· Auto igniting:	Product is not selfigniting.
· Danger of explosion:	Product is not explosive. However, formation of explosive air/vapor mixtures are possible.
· Explosion limits:	
Lower:	1.3 Vol %
Upper:	0.0 Vol %
· Vapor pressure at 20 °C (68 °F):	11 hPa (8 mm Hg)
· Density:	See other information
· Relative density	Not determined.
· Vapor density	Not determined.
· Evaporation rate	1.6-2.3 (BuAc=1)
· Solubility in / Miscibility with Water:	Water miscible No
· Partition coefficient (n-octanol/water):	Not determined.
· Viscosity:	
Dynamic:	Not determined.
Kinematic:	Not determined.
· Solvent content:	
Organic solvents:	0.0 %
Solids content:	58.1 %
· Other information	No further relevant information available.

10 Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability** Stable under normal use conditions
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** Exothermic polymerization.
- **Conditions to avoid**
Heat, flames and sparks. Extremes of temperature and direct sunlight.
Contact with incompatible materials.
- **Incompatible materials:** Strong Oxidizing Agents, Strong Acids, Strong Bases
- **Hazardous decomposition products:**
Carbon monoxide and carbon dioxide
Corrosive gases/vapors
Danger of toxic pyrolysis products.

11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity:**

· **LD/LC50 values that are relevant for classification:**

Epoxy Resin M2

Oral	LD50	>2000 mg/kg (Rat)
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(Contd. on page 7)

Trade name: PermiNex™ 1000 Series Resists

(Contd. of page 6)

2530-83-8 [3-(2,3-epoxypropoxy)propyl]trimethoxysilane

Oral LD50 8030 mg/kg (Rat)

Dermal LD50 4248 mg/kg (Rat)

Inhalative LC50/4 h > 5.3 mg/l (Rat)

120-92-3 Cyclopentanone

Oral LD50 1820 mg/kg (Rat)

Dermal LD50 >2000 mg/kg (rabbit)

Inhalative LC50/4 h 19.5 mg/l (Rat)

· **Primary irritant effect:**· **on the skin:** Irritant to skin and mucous membranes.· **on the eye:** Irritating effect.· **Sensitization:** Sensitization possible through skin contact.· **Additional toxicological information:**The product shows the following dangers according to internally approved calculation methods for preparations:
Irritant· **Carcinogenic categories**· **IARC (International Agency for Research on Cancer)**

None of the ingredients are listed.

· **NTP (National Toxicology Program)**

None of the ingredients are listed.

· **OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients are listed.

12 Ecological information· **Toxicity**· **Aquatic toxicity:****2530-83-8 [3-(2,3-epoxypropoxy)propyl]trimethoxysilane**

LC50/96 h 55 mg/l (Cyprinus carpio (common carp))

EC50/48 h 30 mg/l (daphnia magna)

EC50/72 h 255 mg/l (Desmodesmus subscipatus (green algae))

120-92-3 Cyclopentanone

LC50/48 hr 2950 mg/L (golden orfe)

LC50/96 h >100 mg/l (fish)

EC50/48 h 3600 mg/l (Ceriodaphnia dubia (water flea))

100 mg/l (daphnia magna)

EC50/72 h >100 mg/l (scenedesmus subspicatus)

· **Persistence and degradability** No further relevant information available.· **Behavior in environmental systems:**· **Bioaccumulative potential** No further relevant information available.· **Mobility in soil** No further relevant information available.· **Additional ecological information:**· **General notes:**

Water hazard class 1 (Self-assessment): slightly hazardous for water

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

(Contd. on page 8)

Trade name: PermiNex™ 1000 Series Resists


(Contd. of page 7)


- Results of PBT and vPvB assessment
- PBT: Not applicable.
- vPvB: Not applicable.
- Other adverse effects No further relevant information available.

13 Disposal considerations

- Waste treatment methods
- Recommendation:
Must not be disposed of as regular garbage/trash. Do not allow product to reach sewage system.
- Uncleaned packagings:
- Recommendation: Disposal must be made in accordance with Federal, State, and Local regulations.

14 Transport information

· UN-Number	
· DOT, ADR, IMDG, IATA	UN1866
· UN proper shipping name	
· DOT, ADR, IATA	Resin solution
· IMDG	RESIN SOLUTION, MARINE POLLUTANT
· Transport hazard class(es)	
· DOT	
	
· Class	3 Flammable liquids
· Label	3

· ADR, IMDG, IATA	
	
· Class	3 Flammable liquids
· Label	3
· Packing group	
· DOT, ADR, IMDG, IATA	III
· Environmental hazards:	Product contains environmentally hazardous substances: Formaldehyde, polymer with 1-chloro-2,3-epoxypropane and phenol
· Marine pollutant:	Yes (DOT)
· Special precautions for user	Warning: Flammable liquids
· Danger code (Kemler):	30
· EMS Number:	F-E,S-E
· Stowage Category	A

(Contd. on page 9)

Trade name: PermiNex™ 1000 Series Resists

(Contd. of page 8)

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| · Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code | Not applicable. |
| · Transport/Additional information: | |
| · DOT | |
| · Quantity limitations | On passenger aircraft/rail: 60 L
On cargo aircraft only: 220 L |
| ----- | |
| · ADR | |
| · Excepted quantities (EQ) | Code: E1
Maximum net quantity per inner packaging: 30 ml
Maximum net quantity per outer packaging: 1000 ml |
| ----- | |
| · IMDG | |
| · Limited quantities (LQ) | 5L |
| · Excepted quantities (EQ) | Code: E1
Maximum net quantity per inner packaging: 30 ml
Maximum net quantity per outer packaging: 1000 ml |
| · UN "Model Regulation": | UN 1866 RESIN SOLUTION, 3, III |

15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture
- Sara

· **Section 355 (extremely hazardous substances):**

None of the ingredients are listed.

· **Section 313 (Specific toxic chemical listings):**

None of the ingredients is listed.

· **TSCA (Toxic Substances Control Act):**

All ingredients are listed or comply with TSCA regulations.

· **Proposition 65**· **Chemicals known to cause cancer:**

None of the ingredients are listed.

· **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients are listed.

· **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients are listed.

· **Chemicals known to cause developmental toxicity:**

None of the ingredients are listed.

· **Carcinogenic categories**· **EPA (Environmental Protection Agency)**

None of the ingredients are listed.

· **TLV (Threshold Limit Value established by ACGIH)**

None of the ingredients are listed.

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients are listed.

(Contd. on page 10)

Trade name: PermiNex™ 1000 Series Resists

(Contd. of page 9)

· Massachusetts State Right To Know List	
120-92-3	Cyclopentanone
· New Jersey State Right To Know List	
120-92-3	Cyclopentanone
2530-83-8	[3-(2,3-epoxypropoxy)propyl]trimethoxysilane
· Pennsylvania Hazardous Substances List	
120-92-3	Cyclopentanone
2530-83-8	[3-(2,3-epoxypropoxy)propyl]trimethoxysilane

- **California SCAQMD Rule 443.1 VOC's:** No information available.
- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms**



GHS02 GHS07 GHS08 GHS09

- **Signal word** Warning
- **Hazard-determining components of labeling:**
Epoxy Resin M3
[3-(2,3-epoxypropoxy)propyl]trimethoxysilane
Epoxy Resin M2
- **Hazard statements**
H226 Flammable liquid and vapor.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H317 May cause an allergic skin reaction.
H341 Suspected of causing genetic defects.
H411 Toxic to aquatic life with long lasting effects.

- **Precautionary statements**
P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P261 Avoid breathing dust/fume/gas/mist/vapors/spray
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P273 Avoid release to the environment.
P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P304+P312 IF INHALED: Call a POISON CENTER/doctor if you feel unwell.
P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
P337+P313 If eye irritation persists: Get medical advice/attention.
P370+P378 In case of fire: Use for extinction: Alcohol resistant foam.
P370+P378 In case of fire: Use for extinction: Fire-extinguishing powder.
P370+P378 In case of fire: Use for extinction: Carbon dioxide.
P302+P352 IF ON SKIN: Wash with plenty of soap and water.
P403+P235 Store in a well-ventilated place. Keep cool.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

- **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

US

(Contd. on page 11)

Trade name: PermiNex™ 1000 Series Resists

(Contd. of page 10)

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Department issuing SDS:** Product safety department
- **Contact:** Mr. Cole

- **Revision History:** New SDS
- **Date of preparation / last revision** 04/28/2016 / -

- **Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

ACGIH: American Conference of Governmental Industrial Hygienists

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

NIOSH: National Institute for Occupational Safety

OSHA: Occupational Safety & Health

TLV: Threshold Limit Value

PEL: Permissible Exposure Limit

REL: Recommended Exposure Limit

Flam. Liq. 3: Flammable liquids, Hazard Category 3

Acute Tox. 4: Acute toxicity, Hazard Category 4

Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2

Eye Dam. 1: Serious eye damage/eye irritation, Hazard Category 1

Eye Irrit. 2: Serious eye damage/eye irritation, Hazard Category 2

Eye Irrit. 2A: Serious eye damage/eye irritation, Hazard Category 2A

Skin Sens. 1: Sensitisation - Skin, Hazard Category 1

Muta. 2: Germ cell mutagenicity, Hazard Category 2

STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3

Aquatic Chronic 2: Hazardous to the aquatic environment - Chronic Hazard, Category 2

Aquatic Chronic 3: Hazardous to the aquatic environment - Chronic Hazard, Category 3