

Safety data sheet
according to 1907/2006/EC, Article 31

Printing date 07.05.2021

Version number 8

Revision: 07.05.2021

SECTION 1: Identification of the substance/mixture and of the company/undertaking**1.1 Product identifier****Trade name:** SU-8 3000 Series Resists**Article number:** Y311075, Y311074, Y311072, Y311060, Y311049**1.2 Relevant identified uses of the substance or mixture and uses advised against**
No further relevant information available.**Sector of Use** SU16 *Manufacture of computer, electronic and optical products, electrical equipment***Application of the substance / the mixture** Photoresist**1.3 Details of the supplier of the safety data sheet****Manufacturer/Supplier:**

Kayaku Advanced Materials, Inc.

200 Flanders Road

Westborough, MA 01581

Tel: (617) 965-5511

Fax: (617) 965-5818

Further information obtainable from:

Product Safety

Email: productsafety@kayakuAM.com**1.4 Emergency telephone number:**Kayaku Advanced Materials : 617-965-5511Chemtrec USA Emergency : 800-424-9300 (24 hr)Chemtrec International Emergency : 703-527-3887 (24 hr)**SECTION 2: Hazards identification****2.1 Classification of the substance or mixture****Classification according to Regulation (EC) No 1272/2008**

GHS02 flame

Flam. Liq. 3 H226 Flammable liquid and vapour.



GHS09 environment

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



GHS07

Acute Tox. 4 H332 Harmful if inhaled.

Skin Irrit. 2 H315 Causes skin irritation.

Eye Irrit. 2 H319 Causes serious eye irritation.

Skin Sens. 1 H317 May cause an allergic skin reaction.

2.2 Label elements**Labelling according to Regulation (EC) No 1272/2008**

The product is classified and labelled according to the CLP regulation.

(Contd. on page 2)

Safety data sheet
 according to 1907/2006/EC, Article 31

Printing date 07.05.2021

Version number 8

Revision: 07.05.2021

Trade name: SU-8 3000 Series Resists

(Contd. of page 1)

 · **Hazard pictograms**


GHS02 GHS07 GHS09

 · **Signal word** Warning

 · **Hazard-determining components of labelling:**

Epoxy resin

Epoxy novolac polymer

Proprietary polyglycidyl ether

Sulfonium, diphenyl[4-(phenylthio)phenyl]-, (OC-6-11)-hexafluoroantimonate(1-) (1:1)

Sulfonium, (thiodi-4,1-phenylene) bis[diphenyl-, (OC-6-11)-hexafluoroantimonate (1-) (1:2)

 · **Hazard statements**

H226 Flammable liquid and vapour.

H332 Harmful if inhaled.

H315 Causes skin irritation.

H319 Causes serious eye irritation.

H317 May cause an allergic skin reaction.

H411 Toxic to aquatic life with long lasting effects.

 · **Precautionary statements**

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P273 Avoid release to the environment.

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

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

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

P304+P341 IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.

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

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 to extinguish: Alcohol resistant foam, Fire-extinguishing powder, Carbon dioxide.

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:**

15.2 % of the mixture consists of component(s) of unknown toxicity.

Contains 15.2 % of components with unknown hazards to the aquatic environment.

 · **2.3 Other hazards**

 · **Results of PBT and vPvB assessment**

 · **PBT:** Not applicable.

 · **vPvB:** Not applicable.

EU

(Contd. on page 3)

Safety data sheet
 according to 1907/2006/EC, Article 31

Printing date 07.05.2021

Version number 8

Revision: 07.05.2021

Trade name: SU-8 3000 Series Resists

(Contd. of page 2)

SECTION 3: Composition/information on ingredients

- **3.2 Chemical characterisation: Mixtures**
- **Description:** Mixture of substances listed below with nonhazardous additions.

- **Dangerous components:**

	Epoxy resin ⚠ Skin Irrit. 2, H315; Eye Irrit. 2, H319; Skin Sens. 1, H317	45-75%
CAS: 120-92-3 EINECS: 204-435-9 Index number: 606-025-00-9	Cyclopentanone ⚠ Flam. Liq. 3, H226; ⚠ Skin Irrit. 2, H315; Eye Irrit. 2, H319	10-25%
CAS: 108-32-7 EINECS: 203-572-1 Index number: 607-194-00-1	Propylene carbonate ⚠ Skin Irrit. 2, H315; Eye Irrit. 2, H319	1-5%
	Proprietary polyglycidyl ether ⚠ Skin Irrit. 2, H315; Eye Irrit. 2, H319; Skin Sens. 1, H317	1-5%
CAS: 89452-37-9	Sulfonium, (thiodi-4,1-phenylene) bis[diphenyl-, (OC-6-11)-hexafluoroantimonate (1-) (1:2) ⚠ Aquatic Acute 1, H400; Aquatic Chronic 1, H410; ⚠ Skin Sens. 1, H317	1-5%
CAS: 71449-78-0	Sulfonium, diphenyl[4-(phenylthio)phenyl]-, (OC-6-11)-hexafluoroantimonate(1-) (1:1) ⚠ Aquatic Acute 1, H400; Aquatic Chronic 1, H410; ⚠ Skin Sens. 1, H317	1-5%
	Adhesion Promoter ⚠ Eye Dam. 1, H318	1-5%
	Cycloaliphatic Epoxy Resin ⚠ Skin Irrit. 2, H315; Eye Irrit. 2, H319	10-25%

- **Additional information:** For the wording of the listed hazard phrases refer to section 16.

SECTION 4: First aid measures

- **4.1 Description of first aid measures**
- **General information:**
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
Immediately remove any clothing soiled by the product.
- **After inhalation:** Supply fresh air and to be sure call for a doctor.
- **After skin contact:**
If skin irritation continues, consult a doctor.
Immediately wash with water and soap and rinse thoroughly.
- **After eye contact:**
Wash eyes immediately with a large amount of water or normal saline, occasionally lifting upper and lower eye lids until no evidence of chemical remains (about 20 minutes). Remove contact lenses if present and easy to remove. Seek immediate medical attention.
- **After swallowing:** Do not induce vomiting; call for medical help immediately.
- **4.2 Most important symptoms and effects, both acute and delayed** No further relevant information available.

(Contd. on page 4)

Safety data sheet
according to 1907/2006/EC, Article 31

Printing date 07.05.2021

Version number 8

Revision: 07.05.2021

Trade name: SU-8 3000 Series Resists

(Contd. of page 3)

· **4.3 Indication of any immediate medical attention and special treatment needed** Treat symptomatically.

SECTION 5: Firefighting measures

- **5.1 Extinguishing media**
- **Suitable extinguishing agents:**
 - Alcohol resistant foam
 - Fire-extinguishing powder
 - Carbon dioxide
- **For safety reasons unsuitable extinguishing agents:** Water with full jet
- **5.2 Special hazards arising from the substance or mixture** No further relevant information available.
- **5.3 Advice for firefighters**
- **Protective equipment:** Wear self-contained respiratory protective device.

SECTION 6: Accidental release measures

- **6.1 Personal precautions, protective equipment and emergency procedures**
 - Wear protective equipment. Keep unprotected persons away.
 - Ensure adequate ventilation
 - Keep away from ignition sources.
- **6.2 Environmental precautions:**
 - Do not allow product to reach sewage system or any water course.
 - Inform respective authorities in case of seepage into water course or sewage system.
 - Do not allow to enter sewers/ surface or ground water.
- **6.3 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
- **6.4 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.

SECTION 7: Handling and storage

- **7.1 Precautions for safe handling**
 - Ensure good ventilation/exhaust at the workplace.
 - Prevent formation of aerosols.
 - Keep away from heat and direct sunlight.
- **Information about fire - and explosion protection:**
 - Keep ignition sources away - Do not smoke.
 - Use explosion-proof apparatus / fittings and spark-proof tools.
 - Protect against electrostatic charges.
- **7.2 Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and containers:**
 - 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 oxidising and acidic materials.

(Contd. on page 5)

Safety data sheet
 according to 1907/2006/EC, Article 31

Printing date 07.05.2021

Version number 8

Revision: 07.05.2021

Trade name: SU-8 3000 Series Resists

(Contd. of page 4)

- Do not store together with alkalis (caustic solutions).
- Do not store together with amines.
- **Further information about storage conditions:**
 Store in cool, dry conditions in well sealed containers.
 Protect from heat and direct sunlight.
 Store receptacle in a well ventilated area.
- **7.3 Specific end use(s)** No further relevant information available.

SECTION 8: Exposure controls/personal protection

- **8.1 Control parameters**
- **Additional information about design of technical facilities:** No further data; see item 7.
- **Ingredients with limit values that require monitoring at the workplace:**
 The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
- **Additional information:** The lists valid during the making were used as basis.
- **8.2 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 protection:**
 In case of low exposure use cartridge respirator. In case of intensive or longer exposure use self-contained respiratory protective device.
- **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**
 The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
- **Eye protection:**



Tightly sealed goggles

SECTION 9: Physical and chemical properties

- **9.1 Information on basic physical and chemical properties**
- **General Information**
- **Appearance:**
Form: Liquid

(Contd. on page 6)

Safety data sheet
 according to 1907/2006/EC, Article 31

Printing date 07.05.2021

Version number 8

Revision: 07.05.2021

Trade name: SU-8 3000 Series Resists

(Contd. of page 5)

· Colour:	Light yellow																								
· Odour:	Mild																								
· Odour threshold:	Not determined.																								
· pH-value:	Not determined.																								
· Change in condition																									
Melting point/freezing point:	Undetermined.																								
Initial boiling point and boiling range:	130 °C																								
· Flash point:	30 °C																								
· Flammability (solid, gas):	Not applicable.																								
· Ignition temperature:	430 °C																								
· Decomposition temperature:	Not determined.																								
· Auto-ignition temperature:	Product is not selfigniting.																								
· Explosive properties:	Product is not explosive. However, formation of explosive air/vapour mixtures are possible.																								
· Explosion limits:																									
Lower:	Not determined.																								
Upper:	Not determined.																								
· Vapour pressure:	Not determined.																								
· Density:	Not determined.																								
· Vapour density	Not determined.																								
· Evaporation rate	1.6-2.3 (BuAc=1)																								
· Solubility in / Miscibility with water:	Not miscible or difficult to mix.																								
· Partition coefficient: n-octanol/water:	Not determined.																								
· Viscosity:																									
Dynamic:	Not determined.																								
· 9.2 Other information																									
	<table border="1"> <thead> <tr> <th>Name</th> <th>Sp. Grav.</th> <th>Vol.(%by wt.)</th> <th>VOC (g/L)</th> </tr> </thead> <tbody> <tr> <td>SU-8 3005</td> <td>1.075</td> <td>48-52</td> <td>538</td> </tr> <tr> <td>SU-8 3010</td> <td>1.106</td> <td>38-42</td> <td>442</td> </tr> <tr> <td>SU-8 3025</td> <td>1.143</td> <td>26-30</td> <td>320</td> </tr> <tr> <td>SU-8 3035</td> <td>1.150</td> <td>24-28</td> <td>300</td> </tr> <tr> <td>SU-8 3050</td> <td>1.153</td> <td>22-27</td> <td>288</td> </tr> </tbody> </table>	Name	Sp. Grav.	Vol.(%by wt.)	VOC (g/L)	SU-8 3005	1.075	48-52	538	SU-8 3010	1.106	38-42	442	SU-8 3025	1.143	26-30	320	SU-8 3035	1.150	24-28	300	SU-8 3050	1.153	22-27	288
Name	Sp. Grav.	Vol.(%by wt.)	VOC (g/L)																						
SU-8 3005	1.075	48-52	538																						
SU-8 3010	1.106	38-42	442																						
SU-8 3025	1.143	26-30	320																						
SU-8 3035	1.150	24-28	300																						
SU-8 3050	1.153	22-27	288																						

SECTION 10: Stability and reactivity

- **10.1 Reactivity** No further relevant information available.
- **10.2 Chemical stability** Stable
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **10.3 Possibility of hazardous reactions** Exothermic polymerisation.
- **10.4 Conditions to avoid**
 Heat, flames and sparks. Extremes of temperature and direct sunlight.
 Contact with incompatible materials.
- **10.5 Incompatible materials:** Strong Oxidizing Agents, Strong Bases, Strong Acids, Amines

(Contd. on page 7)

Safety data sheet
 according to 1907/2006/EC, Article 31

Printing date 07.05.2021

Version number 8

Revision: 07.05.2021

Trade name: SU-8 3000 Series Resists

(Contd. of page 6)

- **10.6 Hazardous decomposition products:**
- Carbon monoxide
- Carbon dioxide
- Danger of forming toxic pyrolysis products.
- Corrosive gases/vapours

SECTION 11: Toxicological information

- **11.1 Information on toxicological effects**

- **Acute toxicity**

Harmful if inhaled.

- **LD/LC50 values relevant for classification:**

Epoxy resin

Oral	LD50	>2000 mg/kg (Rat)
Dermal	LD50	>2000 mg/kg (rabbit)
Inhalative	LC50	>5 mg/L (Rat)

Adhesion Promoter

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)

Proprietary polyglycidyl ether

Oral	LD50	>2000 mg/kg (Rat)
------	------	-------------------

- **Primary irritant effect:**

- **Skin corrosion/irritation**

Causes skin irritation.

- **Serious eye damage/irritation**

Causes serious eye irritation.

- **Respiratory or skin sensitisation**

May cause an allergic skin reaction.

- **Additional toxicological information:**

- **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**

- **Germ cell mutagenicity** Based on available data, the classification criteria are not met.

- **Carcinogenicity** Based on available data, the classification criteria are not met.

- **Reproductive toxicity** Based on available data, the classification criteria are not met.

- **STOT-single exposure** Based on available data, the classification criteria are not met.

- **STOT-repeated exposure** Based on available data, the classification criteria are not met.

- **Aspiration hazard** Based on available data, the classification criteria are not met.

EU

(Contd. on page 8)

Safety data sheet
 according to 1907/2006/EC, Article 31

Printing date 07.05.2021

Version number 8

Revision: 07.05.2021

Trade name: SU-8 3000 Series Resists

(Contd. of page 7)

SECTION 12: Ecological information

· **12.1 Toxicity**

· Aquatic toxicity:	
Epoxy resin	
100 < LC/EC/IC 50	≤ 1000 mg/l (algae) ≤ 1000 mg/l (fish) ≤ 1000 mg/l (invertebrates)
89452-37-9 Sulfonium, (thiodi-4,1-phenylene) bis[diphenyl-, (OC-6-11)-hexafluoroantimonate (1-)] (1:2)	
LC50/24 h	4.4 mg/l (daphnia)
LC50/48 hr	0.68 mg/L (daphnia)
71449-78-0 Sulfonium, diphenyl[4-(phenylthio)phenyl]-, (OC-6-11)-hexafluoroantimonate(1-) (1:1)	
LC50/24 h	4.4 mg/l (daphnia)
LC50/48 hr	0.68 mg/L (daphnia)
Adhesion Promoter	
EC50/48 h	30 mg/l (daphnia magna)
EC50/72 h	255 mg/l (Desmodesmus subscipatus (green algae))
LC50/96 h	55 mg/l (Cyprinus carpio (common carp))
120-92-3 Cyclopentanone	
EC50/48 h	3600 mg/l (Ceriodaphnia dubia (water flea)) 100 mg/l (daphnia magna)
EC50/72 h	> 100 mg/l (scenedesmus subspicatus)
LC50/48 hr	2950 mg/L (golden orfe)
LC50/96 h	> 100 mg/l (fish)

· **12.2 Persistence and degradability** No further relevant information available.

· **12.3 Bioaccumulative potential** No further relevant information available.

· **12.4 Mobility in soil** No further relevant information available.

· **Ecotoxicological effects:**

· **Remark:** Toxic for fish

· **Additional ecological information:**

· **General notes:**

Water hazard class 1 (German Regulation) (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.

Also poisonous for fish and plankton in water bodies.

Toxic for aquatic organisms

· **12.5 Results of PBT and vPvB assessment**

· **PBT:** Not applicable.

· **vPvB:** Not applicable.

· **12.6 Other adverse effects** No further relevant information available.

SECTION 13: Disposal considerations

· **13.1 Waste treatment methods**

· **Recommendation**

Must not be disposed together with household garbage. Do not allow product to reach sewage system.

(Contd. on page 9)

Safety data sheet
 according to 1907/2006/EC, Article 31

Printing date 07.05.2021

Version number 8

Revision: 07.05.2021


Trade name: SU-8 3000 Series Resists

(Contd. of page 8)

Disposal must be made in accordance with International, National, and regional regulations.

- **Uncleaned packaging:**
- **Recommendation:** Disposal must be made according to official regulations.

SECTION 14: Transport information

· 14.1 UN-Number · ADR, IMDG, IATA	UN1866
· 14.2 UN proper shipping name · ADR, IATA · IMDG	RESIN SOLUTION RESIN SOLUTION, MARINE POLLUTANT
· 14.3 Transport hazard class(es) · ADR, IMDG, IATA	 · Class 3 Flammable liquids. · Label 3
· 14.4 Packing group · ADR, IMDG, IATA	III
· 14.5 Environmental hazards: · Marine pollutant:	Product contains environmentally hazardous substances: Triarylsulfonium salt Yes
· 14.6 Special precautions for user · Hazard identification number (Kemler code): · EMS Number:	Warning: Flammable liquids. 33 F-E, <u>S-E</u>
· 14.7 Transport in bulk according to Annex II of Marpol and the IBC Code	Not applicable.
· Transport/Additional information:	
· ADR · Limited quantities (LQ) · Transport category · Tunnel restriction code	5L 3 D/E
· UN "Model Regulation":	UN1866, RESIN SOLUTION, 3, III

SECTION 15: Regulatory information

- 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
No further relevant information available.
- Directive 2012/18/EU
- REGULATION (EC) No 1907/2006 ANNEX XVII Conditions of restriction: 3

(Contd. on page 10)

Safety data sheet
according to 1907/2006/EC, Article 31

Printing date 07.05.2021

Version number 8

Revision: 07.05.2021

Trade name: SU-8 3000 Series Resists

(Contd. of page 9)

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

SECTION 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.

· Relevant phrases

H226 Flammable liquid and vapour.

H315 Causes skin irritation.

H317 May cause an allergic skin reaction.

H318 Causes serious eye damage.

H319 Causes serious eye irritation.

H400 Very toxic to aquatic life.

H410 Very toxic to aquatic life with long lasting effects.

· Classification according to Regulation (EC) No 1272/2008

Art. 9(1) of Regulation (EC) No. 1272/2008 was used for classification purposes.

· Department issuing SDS: Product safety department

· **Contact:** Tom Cole, EHS Manager (tcole@kayakuAM.com)

· Revision History:

The manufacturer's information in Section 1, the product hazard information in Section 2 and the component hazard information in Section 3 have been updated.

· Abbreviations and acronyms:

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

ICAO: International Civil Aviation Organisation

ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

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)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

Flam. Liq. 3: Flammable liquids – Category 3

Acute Tox. 4: Acute toxicity – Category 4

Skin Irrit. 2: Skin corrosion/irritation – Category 2

Eye Dam. 1: Serious eye damage/eye irritation – Category 1

Eye Irrit. 2: Serious eye damage/eye irritation – Category 2

Skin Sens. 1: Skin sensitisation – Category 1

Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1

Aquatic Chronic 1: Hazardous to the aquatic environment - long-term aquatic hazard – Category 1

Aquatic Chronic 2: Hazardous to the aquatic environment - long-term aquatic hazard – Category 2