MICRO CHEM

Safety Data Sheet
acc. to OSHA HCS

Printing date 10/15/2014 Reviewed on 10/15/2014

1 Identification of the substance/mixture and of the company

· **Product identifier**

· **Trade name: SU-8 2000 Series Resists**

· **Product number:**
Y111004, Y111007, Y111014, Y111022, Y111029, Y111045, Y111053, Y111058, Y111064, Y111069, Y111070, Y111072, Y111074, Y111075, Y111077

· **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.

GHS09 Environment

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

GHS07

Acute Tox. 4 H302 Harmful if swallowed.
Acute Tox. 4 H332 Harmful if inhaled.
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 GHS09

(Contd. on page 2)

MICRO CHEM

Safety Data Sheet
acc. to OSHA HCS

Printing date 10/15/2014 Reviewed on 10/15/2014

Trade name: SU-8 2000 Series Resists

(Contd. of page 1)

· **Signal word** Warning

· **Hazard-determining components of labeling:**
Cyclopentanone
Formaldehyde, polymer with (chloromethyl)oxirane and 4,4'-(1-methylethylidene)bis[phenol]
Sulfonium, (thiodi-4,1-phenylene) bis[diphenyl-,(OC-6-11)-hexafluoroantimonate (1-) (1:2)
Sulfonium, diphenyl[4-(phenylthio)phenyl]-, (OC-6-11)-hexafluoroantimonate(1-) (1:1)

· **Hazard statements**

H226	Flammable liquid and vapor.
H302+H332	Harmful if swallowed or 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/sparks/open flames/hot surfaces. No smoking.
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P233	Keep container tightly closed.
P273	Avoid release to the environment.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312	Call a POISON CENTER or doctor/physician if you feel unwell.
P363	Wash contaminated clothing before reuse.
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.
P391	Collect spillage.
P403+P235	Store in a well-ventilated place. Keep cool.
P501	Dispose of contents/container in accordance with local/regional/national/international regulations.

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

Health = 2
Fire = 3
Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**

Health = 2
Fire = 3
Reactivity = 0

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

(Contd. on page 3)

MICRO CHEM

Safety Data Sheet
acc. to OSHA HCS

Printing date 10/15/2014 *Reviewed on 10/15/2014*

Trade name: SU-8 2000 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:**		
28906-96-9	Formaldehyde, polymer with (chloromethyl)oxirane and 4,4'-(1-methylethylidene) bis[phenol] Skin Irrit. 2, H315; Eye Irrit. 2A, H319; Skin Sens. 1, H317	3-75%
120-92-3	Cyclopentanone Flam. Liq. 3, H226; Acute Tox. 4, H302; Acute Tox. 4, H332; Skin Irrit. 2, H315; Eye Irrit. 2, H319	15-96%
108-32-7	Propylene carbonate Skin Irrit. 2, H315; Eye Irrit. 2, H319	0.1-5%
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	0.05-2.5%
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	0.05-2.5%

4 First-aid measures

· **Description of first aid measures**
· **After inhalation:** Supply fresh air or oxygen; call for doctor.
· **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
· **After eye contact:**
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
· **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**
No further relevant information available.

5 Fire-fighting measures

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

(Contd. on page 4)

MICRO CHEM

Safety Data Sheet
acc. to OSHA HCS

Printing date 10/15/2014 *Reviewed on 10/15/2014*

Trade name: SU-8 2000 Series Resists

(Contd. of page 3)

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures**
Wear protective equipment. Keep unprotected persons away.
· **Environmental precautions:**
Do not allow product to reach sewage system or any drains.
Inform respective authorities in case of seepage into water course or sewage system.
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).
Dispose contaminated material as waste according to Section 13.
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.
Use explosion-proof apparatus / fittings and spark-proof tools.
Protect against electrostatic charges.

· **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.
Store in a cool location.
· **Information about storage in one common storage facility:**
Do not store together with alkalis (caustic solutions).
Do not store together with oxidizing and acidic materials.
· **Further information about storage conditions:** Keep container well-sealed in cool, dry location.
· **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.

· **Control parameters**

· **Components with limit values that require monitoring at the workplace:**	
89452-37-9 Sulfonium, (thiodi-4,1-phenylene) bis[diphenyl-,(OC-6-11)-hexafluoroantimonate (1-) (1:2)	
ACGIH TLV TWA	Long-term value: 0.5 mg/m³
NIOSH IDLH	Long-term value: 50 mg/m³
OSHA PEL	Long-term value: 0.5 mg/m³

(Contd. on page 5)

MICRO CHEM

Safety Data Sheet
acc. to OSHA HCS

Printing date 10/15/2014 *Reviewed on 10/15/2014*

Trade name: SU-8 2000 Series Resists

(Contd. of page 4)

71449-78-0 Sulfonium, diphenyl[4-(phenylthio)phenyl]-, (OC-6-11)-hexafluoroantimonate(1-) (1:1)	
	ACGIH TLV TWA: Long-term value: 0.5 mg/m³
NIOSH IDLH	Long-term value: 50 mg/m³
OSHA PEL	Long-term value: 0.5 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
Butyl rubber, BR
· **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:	Liquid
Color:	Clear to light yellow
· **Odor:**	Sweet
· **Odour 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)

(Contd. on page 6)

MICRO CHEM

Safety Data Sheet
acc. to OSHA HCS

Printing date 10/15/2014 *Reviewed on 10/15/2014*

Trade name: SU-8 2000 Series Resists

(Contd. of page 5)

· **Decomposition temperature:**	Not determined.
· **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:	Not determined.
Upper:	Not determined.
· **Vapor pressure:**	Not determined.
· **Density:**	
Relative density	Not determined.
Vapour 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.
· **Other information**	Table 1. Product specific gravity and VOC data.

Name	Sp. Grav.	Vol.(%by wt.)	VOC (g/L)
SU-8 2000.1	1.00	94-98	960
SU-8 2000.2	1.00	90-95	930
SU-8 2000.5	1.07	85-90	920
SU-8 2001	1.100	80-85	860
SU-8 2002	1.123	70-75	800
SU-8 2005	1.164	50-55	640
SU-8 2007	1.175	45-50	550
SU-8 2010	1.187	40-45	500
SU-8 2015	1.200	35-40	430
SU-8 2025	1.219	30-35	380
SU-8 2035	1.227	20-30	370
SU-8 2050	1.233	20-30	345
SU-8 2075	1.236	20-30	320
SU-8 2100	1.237	20-30	310
SU-8 2150	1.238	20-30	285

10 Stability and reactivity

· **Reactivity**
· **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** No further relevant information available.
· **Incompatible materials:** No further relevant information available.
· **Hazardous decomposition products:**
Carbon monoxide
Corrosive gases/vapors

(Contd. on page 7)

MICRO CHEM

Safety Data Sheet
acc. to OSHA HCS

Printing date 10/15/2014 *Reviewed on 10/15/2014*

Trade name: SU-8 2000 Series Resists

(Contd. of page 6)

Danger of toxic pyrolysis products.
Antimony oxide

11 Toxicological information

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

· **LD/LC50 values that are relevant for classification:**		
28906-96-9 Formaldehyde, polymer with (chloromethyl)oxirane and 4,4'-(1-methylethylidene)bis[phenol]		
Oral	LD50	>2000 mg/kg (Rat)
Dermal	LD50	>2000 mg/kg (rabbit)
Inhalative	LC50	>5 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)
108-32-7 Propylene carbonate		
Oral	LD50	>29000 mg/kg (Rat)
Dermal	LD50	>20.000 mg/kg (rabbit)

· **Specific symptoms in biological assay:**
Formaldehyde, polymer with (chloromethyl)oxirane and 4,4'-(1-methylethylidene)bis[phenol] CAS 28906-96-9:
This material was mutagenic in the Ames bacterial assay and showed a positive result in a mammalian cell chromosomal aberration test.
Mixture of triarylsulfonium/hexafluoroantimonate salts (CAS 71449-78-0 and 89452-37-9) in propylene carbonate (CAS 108-32-7):
This material was mutagenic in the Ames bacterial assay. It is inactive, however, in the in vivo mouse micronucleus test.
Propylene carbonate (CAS 108-32-7):
This substance had a negative Ames test with or without metabolic activation.
· **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:** *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.

12 Ecological information

· **Toxicity**

· **Aquatic toxicity:**	
28906-96-9 Formaldehyde, polymer with (chloromethyl)oxirane and 4,4'-(1-methylethylidene)bis[phenol]	
100<LC/EC/IC 50	≤1000 mg/l (algae)

(Contd. on page 8)

MICRO CHEM

Safety Data Sheet
acc. to OSHA HCS

Printing date 10/15/2014 *Reviewed on 10/15/2014*

Trade name: SU-8 2000 Series Resists

(Contd. of page 7)

	≤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 LC50/48 hr	4.4 mg/l (daphnia) 0.68 mg/L (daphnia)
71449-78-0 Sulfonium, diphenyl[4-(phenylthio)phenyl]-, (OC-6-11)-hexafluoroantimonate(1-) (1:1)	
LC50/24 h LC50/48 hr	4.4 mg/l (daphnia) 0.68 mg/L (daphnia)

· **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.
· **Ecotoxical effects:**
· **Remark:** Toxic for fish
· **Additional ecological information:**
· **General notes:**
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
· **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.
Disposal must be made in accordance with Federal, State, and Local regulations.

· **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**	Resin solution
· **IMDG**	RESIN SOLUTION (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)), MARINE POLLUTANT
· **IATA**	RESIN SOLUTION

(Contd. on page 9)

MICRO CHEM

Safety Data Sheet
acc. to OSHA HCS

Printing date 10/15/2014 *Reviewed on 10/15/2014*

Trade name: SU-8 2000 Series Resists

(Contd. of page 8)

· **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:**	
· **Marine pollutant:**	Yes
· **Special precautions for user**	Warning: Flammable liquids
· **Danger code (Kemler):**	30
· **EMS Number:**	F-E,S-D
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable.
· **UN "Model Regulation":**	UN1866, 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):**

89452-37-9	Sulfonium, (thiodi-4,1-phenylene) bis[diphenyl-,(OC-6-11)-hexafluoroantimonate (1-) (1:2)
71449-78-0	Sulfonium, diphenyl[4-(phenylthio)phenyl]-, (OC-6-11)-hexafluoroantimonate(1-) (1:1)

· **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.

(Contd. on page 10)

MICRO CHEM

Safety Data Sheet
acc. to OSHA HCS

Printing date 10/15/2014 Reviewed on 10/15/2014

Trade name: SU-8 2000 Series Resists

(Contd. of page 9)

· **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.

· **OSHA-Ca (Occupational Safety & Health Administration)**
None of the ingredients are listed.

· **Massachusetts State Right To Know List**

120-92-3	Cyclopentanone

· **New Jersey State Right To Know List**

120-92-3	Cyclopentanone

· **Pennsylvania Hazardous Substances List**

120-92-3	Cyclopentanone

· **California SCAQMD Rule 443.1 VOC's:** See Table 1 - Section 9
· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
· **Hazard pictograms**

GHS02 GHS07 GHS09

· **Signal word** Warning

· **Hazard-determining components of labeling:**
Cyclopentanone
Formaldehyde, polymer with (chloromethyl)oxirane and 4,4'-(1-methylethylidene)bis[phenol]
Sulfonium, (thiodi-4,1-phenylene) bis[diphenyl-,(OC-6-11)-hexafluoroantimonate (1-) (1:2)
Sulfonium, diphenyl[4-(phenylthio)phenyl]-, (OC-6-11)-hexafluoroantimonate(1-) (1:1)
· **Hazard statements**
H226 Flammable liquid and vapor.
H302+H332 Harmful if swallowed or 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/sparks/open flames/hot surfaces. No smoking.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P233 Keep container tightly closed.
P273 Avoid release to the environment.

(Contd. on page 11)

MICRO CHEM

Safety Data Sheet
acc. to OSHA HCS

Printing date 10/15/2014 Reviewed on 10/15/2014

Trade name: SU-8 2000 Series Resists

(Contd. of page 10)

P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312	Call a POISON CENTER or doctor/physician if you feel unwell.
P363	Wash contaminated clothing before reuse.
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.
P391	Collect spillage.
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.

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 MSDS:** Product safety department
· **Contact:** Mr. Cole

· **Revision History:**
The business address of the manufacturer in Section 1 was updated. The hazard classification and precautionary statements for the mixture in Section 2 were revised. The toxicology data in Sections 11 and 12 were revised.
· **Date of preparation / last revision** 10/15/2014 / 6
· **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 Organization
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