MICRO CHEM

Safety Data Sheet
acc. to ISO/DIS 11014

Printing date 09/03/2013 Reviewed on 08/15/2013

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 preparation** Photoresist

· **Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
MicroChem Corp.
90 Oak Street
P.O. Box 426
Newton, MA 02464-0002 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 Hazards 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

Acute Tox. 4	H312	Harmful in contact with skin.
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.
STOT SE 3	H335-H336	May cause respiratory irritation. May cause drowsiness or dizziness.
Acute Tox. 5	H303	May be harmful if swallowed.

· **Label elements**
· **GHS label elements** The product is classified and labelled according to the Globally Harmonized System (GHS).

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· **Hazard pictograms**

GHS02 GHS07 GHS08 GHS09

· **Signal word** Warning

· **Hazard-determining components of labelling:**
Cyclopentanone
Epoxy resin
Bis-triarylsulfonium hexafluoroantimonate salt
Aromatic sulfonium hexafluoroantimonate salt

· **Hazard statements**

H226	Flammable liquid and vapor.
H303	May be harmful if swallowed.
H312	Harmful in contact with skin.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H317	May cause an allergic skin reaction.
H341	Suspected of causing genetic defects.
H335-H336	May cause respiratory irritation. May cause drowsiness or dizziness.
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.
P201	Obtain special instructions before use.
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

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· **HMIS-ratings (scale 0 - 4)**

HEALTH 2	Health = 2
FIRE 3	Fire = 3
REACTIVITY 0	Reactivity = 0

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

3 Composition/information on ingredients

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

· **Dangerous components:**

28906-96-9	Epoxy resin Muta. 2, H341; Eye Irrit. 2A, H319; Skin Sens. 1, H317	3-75%
120-92-3	Cyclopentanone Flam. Liq. 3, H226; Acute Tox. 4, H312; Acute Tox. 4, H332; Skin Irrit. 2, H315; Eye Irrit. 2, H319; STOT SE 3, H335-H336	15-96%
108-32-7	Propylene carbonate Skin Irrit. 2, H315; Eye Irrit. 2, H319	0.1-5%
89452-37-9	Bis-triarylsulfonium hexafluoroantimonate salt Muta. 2, H341; Aquatic Acute 1, H400; Aquatic Chronic 1, H410; Skin Sens. 1, H317	0.05-2.5%
71449-78-0	Aromatic sulfonium hexafluoroantimonate salt Muta. 2, H341; 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 Firefighting measures

· **Extinguishing media**
· **Suitable extinguishing agents:**
Alcohol resistant foam

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Fire-extinguishing powder
Carbon dioxide
· **For safety reasons unsuitable extinguishing agents:**
Water with full jet
Water
· **Special hazards arising from the substance or mixture**
Containers may explode due to pressure increase when container is exposed to extreme heat. Vapors may travel a considerable distance to a source of ignition and flash back along vapor trail.
· **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.
· **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.
Use only under yellow light
· **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**
Store SU-8 2000 resists upright and in tightly closed containers in a cool, dry environment away from direct sunlight at a temperature of 40-70 F (4-21 C). Store away from light, acids, heat and sources of ignition.
· **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.
Do not store together with amines.
· **Further information about storage conditions:** Keep container well-sealed in cool, dry location.

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· **Specific end use(s)**
Negative tone photoresist for use in manufacturer of semiconductor, MEMS, and related devices.

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 Bis-triarylsulfonium hexafluoroantimonate salt	
ACGIH TLV TWA	0.5 mg/m³
NIOSH IDLH	50 mg/m³
OSHA PEL	0.5 mg/m³
71449-78-0 Aromatic sulfonium hexafluoroantimonate salt	
	ACGIH TLV TWA: 0.5 mg/m³
NIOSH IDLH	50 mg/m³
OSHA PEL	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
· **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

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· **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)
· **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:**	See Table 1 Other Information below
· **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.

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· **Other information**

Table 1. Product specific gravity and VOC data.

Name	Number	Sp. Grav.	Vol.(%by wt.)	VOC (g/L)
SU-8 2000.1	Y111004	1.00	94-98	960
SU-8 2000.2	Y111007	1.00	90-95	930
SU-8 2000.5	Y111014	1.07	85-90	920
SU-8 2001	Y111022	1.100	80-85	860
SU-8 2002	Y111029	1.123	70-75	800
SU-8 2005	Y111045	1.164	50-55	640
SU-8 2007	Y111053	1.175	45-50	550
SU-8 2010	Y111058	1.187	40-45	500
SU-8 2015	Y111064	1.200	35-40	430
SU-8 2025	Y111069	1.219	30-35	380
SU-8 2035	Y111070	1.227	20-30	370
SU-8 2050	Y111072	1.233	20-30	345
SU-8 2075	Y111074	1.236	20-30	320
SU-8 2100	Y111075	1.237	20-30	310
SU-8 2150	Y111077	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** Heat, flames and sparks. Extremes of temperature and direct sunlight.
· **Incompatible materials:**
Strong Oxidizing Agents, Strong Bases, Strong Acids, Strong Reducing Agents, Iron, Hydrazine
· **Hazardous decomposition products:**
Carbon monoxide
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:**		
28906-96-9 Epoxy resin		
Oral	LD50	>2000 mg/kg (rat)
Dermal	LD50	>2000 mg/kg (rabbit)
Inhalative	LC50	5 mg/L (rat)
	100<LC/EC/IC 50	≤1000 mg/l (algae)
		≤1000 mg/l (fish)
		≤1000 mg/l (invertebrates)
120-92-3 Cyclopentanone		
Oral	LD50	1180 mg/kg (rat)
Dermal	LD50	>2000 mg/kg (rabbit)

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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:**
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.
Epoxy resin CAS 28906-96-9:
This material was mutagenic in the Ames bacterial assay.
· **Primary irritant effect:**
· **on the skin:** Irritant to skin and mucous membranes.
· **on the eye:** Irritating effect.
· **Sensitization:** Sensitization possible through skin contact.
· **Experience with humans:** No further relevant information available.
· **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:**	
89452-37-9 Bis-triarylsulfonium hexafluoroantimonate salt	
EC50/17 h	>10000 mg/l (Pseudomonas putida)
EC50/48 h	>500 mg/l (daphnia magna)
EC50/72 h	>500 mg/l (scenedesmus subspicatus)
71449-78-0 Aromatic sulfonium hexafluoroantimonate salt	
EC50/17 h	>10000 mg/l (Pseudomonas putida)
EC50/48 h	>500 mg/l (daphnia magna)
EC50/72 h	>500 mg/l (scenedesmus subspicatus)
108-32-7 Propylene carbonate	
EC50/17 h	>10000 mg/l (Pseudomonas putida)
EC50/48 h	>500 mg/l (daphnia magna)
EC50/72 h	>500 mg/l (scenedesmus subspicatus)
LC50/96 h	2200 mg/l (Leuciscus idus)

· **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.

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· **Ecotoxical effects:**
· **Remark:** Toxic for fish
· **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.
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, IMDG, IATA**	RESIN SOLUTION
· **ADR**	1866 RESIN SOLUTION
· **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

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· **Environmental hazards:**	
· **Marine pollutant:**	No
· **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	Bis-triarylsulfonium hexafluoroantimonate salt
71449-78-0	Aromatic sulfonium hexafluoroantimonate salt

· **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.

· **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

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· **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 labelled according to the Globally Harmonized System (GHS).
· **Hazard pictograms**

GHS02 GHS07 GHS08 GHS09

· **Signal word** Warning

· **Hazard-determining components of labelling:**
Cyclopentanone
Epoxy resin
Bis-triarylsulfonium hexafluoroantimonate salt
Aromatic sulfonium hexafluoroantimonate salt
· **Hazard statements**

H226	Flammable liquid and vapor.
H303	May be harmful if swallowed.
H312	Harmful in contact with skin.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H317	May cause an allergic skin reaction.
H341	Suspected of causing genetic defects.
H335-H336	May cause respiratory irritation. May cause drowsiness or dizziness.
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.
P201	Obtain special instructions before use.
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.

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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. Weber

· **Last Revision Date:**
8/15/2013 Revised precautionary statements. Updated component toxicology data and US State Right to Know listings.

· **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
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent