1 Identification of the substance/mixture and of the company

- **Product identifier**
  - **Trade name:** SU-8 3000 Series Resists
- **Product number:** Y311075, Y311074, Y311072, Y311060, Y311049
- **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**
  - **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

- **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  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.

(Contd. on page 2)
Hazard pictograms

GHS02  GHS07  GHS08  GHS09

Signal word Warning

Hazard-determining components of labeling:
Cyclopentanone
Formaldehyde, polymer with (chloromethyl)oxirane and 4,4′-(1-methylethylidene)bis[phenol]
[3-(2,3-epoxypropoxy)propyl]trimethoxysilane
Formaldehyde, polymer with (chloromethyl)oxirane and phenol

Hazard statements
H226 Flammable liquid and vapor.
H302+H332 Harmful if swallowed or inhaled.
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/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.
P308+P313 IF exposed or concerned: Get medical advice/attention.
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.

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

Classification system:
NFPA ratings (scale 0 - 4)

Health = 2
Fire = 3
Reactivity = 0
3 Composition/information on ingredients

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

<table>
<thead>
<tr>
<th>Dangerous components</th>
<th>Chemical formula</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>28906-96-9 Formaldehyde, polymer with (chloromethyl)oxirane and 4,4'-(1-methylene)idene bis[phenol]</td>
<td>25-50%</td>
<td></td>
</tr>
<tr>
<td>120-92-3 Cyclopentanone</td>
<td>10-25%</td>
<td></td>
</tr>
<tr>
<td>9003-36-5 Formaldehyde, polymer with (chloromethyl) oxirane and phenol</td>
<td>10-25%</td>
<td></td>
</tr>
<tr>
<td>244772-00-7 Cycloaliphatic Epoxy Resin</td>
<td>10-25%</td>
<td></td>
</tr>
<tr>
<td>108-32-7 Propylene carbonate</td>
<td>1-5%</td>
<td></td>
</tr>
<tr>
<td>26142-30-3 Poly[oxy(methyl-1,2-ethanediyl)], α-(2-oxiranylmethyl)-o-(2-oxiranylmethoxy)-</td>
<td>1-5%</td>
<td></td>
</tr>
<tr>
<td>894523-79-9 Sulfonium, (thiodi-4,4-phenylene) bis[diphenyl-(OC-6-11)-hexafluoroantimonate (1-2)</td>
<td>1-5%</td>
<td></td>
</tr>
<tr>
<td>71449-78-0 Sulfonium, diphenyl[4-(phenylthio)phenyl]-, (OC-6-11)-hexafluoroantimonate(1-) (1:2)</td>
<td>1-5%</td>
<td></td>
</tr>
<tr>
<td>2530-83-8 [3-(2,3-epoxyprooxy)propyltrimethoxysilane</td>
<td>1-5%</td>
<td></td>
</tr>
</tbody>
</table>

4 First-aid measures

- 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.
Trade name: SU-8 3000 Series Resists

· After eye contact:
  Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
· 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.

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.
    Keep receptacles tightly sealed.
    Keep away from heat and direct sunlight.
  · 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.

· **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).
  Do not store together with amines.

· **Further information about storage conditions:**
  Protect from exposure to the light.
  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**

<table>
<thead>
<tr>
<th>Component</th>
<th>ACGIH TLV TWA</th>
<th>NIOSH IDLH</th>
<th>OSHA PEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>89452-37-9 Sulfonium, (thiodi-4,1-phenylene) bis[diphenyl-(OC-6-11)-hexafluoroantimonate (1-) (1:2)</td>
<td>0.5 mg/m³</td>
<td>50 mg/m³</td>
<td>0.5 mg/m³</td>
</tr>
<tr>
<td>71449-78-0 Sulfonium, diphenyl[4-(phenylthio)phenyl]-, (OC-6-11)-hexafluoroantimonate(1-) (1:1)</td>
<td>ACGIH TLV TWA: 0.5 mg/m³</td>
<td>50 mg/m³</td>
<td>0.5 mg/m³</td>
</tr>
</tbody>
</table>

· **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](image)

  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.

(Contd. on page 6)
### 9 Physical and chemical properties

- **Information on basic physical and chemical properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General Information</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Appearance</strong></td>
<td></td>
</tr>
<tr>
<td>Form:</td>
<td>Liquid</td>
</tr>
<tr>
<td>Color:</td>
<td>Light yellow</td>
</tr>
<tr>
<td>Odor:</td>
<td>Recognizable</td>
</tr>
<tr>
<td>Odour threshold:</td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>pH-value:</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Change in condition</strong></td>
<td></td>
</tr>
<tr>
<td>Melting point/Melting range:</td>
<td>Undetermined.</td>
</tr>
<tr>
<td>Boiling point/Boiling range:</td>
<td>130 °C (266 °F)</td>
</tr>
<tr>
<td><strong>Flash point:</strong></td>
<td>30 °C (86 °F)</td>
</tr>
<tr>
<td><strong>Flammability (solid, gaseous):</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Ignition temperature:</strong></td>
<td>430 °C (806 °F)</td>
</tr>
<tr>
<td><strong>Decomposition temperature:</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Auto igniting:</strong></td>
<td>Product is not selfigniting.</td>
</tr>
<tr>
<td><strong>Danger of explosion:</strong></td>
<td>Product is not explosive. However, formation of explosive air/vapor mixtures are possible.</td>
</tr>
<tr>
<td><strong>Explosion limits:</strong></td>
<td></td>
</tr>
<tr>
<td>Lower:</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Upper:</td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Vapor pressure:</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Density:</strong></td>
<td>See other information</td>
</tr>
<tr>
<td><strong>Vapour density</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Evaporation rate</strong></td>
<td>1.6-2.3 (BuAc=1)</td>
</tr>
<tr>
<td><strong>Solubility in / Miscibility with Water:</strong></td>
<td>Water miscible No</td>
</tr>
<tr>
<td><strong>Partition coefficient (n-octanol/water):</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Viscosity:</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td>Dynamic:</td>
<td>Not determined.</td>
</tr>
</tbody>
</table>

(Contd. on page 7)
Safety Data Sheet
acc. to OSHA HCS

Trade name: SU-8 3000 Series Resists

### 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
  - Carbon dioxide
  - Danger of toxic pyrolysis products.
  - Corrosive gases/vapors

### 11 Toxicological information

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

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Oral LD50</th>
<th>Dermal LD50</th>
<th>Inhalative LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde, polymer with (chloromethyl)oxirane and 4,4’-(1-methylethylidene)bis[phenol]</td>
<td>&gt;2000 mg/kg (Rat)</td>
<td>&gt;2000 mg/kg (rabbit)</td>
<td>&gt;5.3 mg/L (Rat)</td>
</tr>
<tr>
<td>28906-96-9</td>
<td>2530-83-8 [3-(2,3-epoxypropoxy)propyl]trimethoxysilane</td>
<td>8030 mg/kg (Rat)</td>
<td>4248 mg/kg (Rat)</td>
</tr>
<tr>
<td>120-92-3 Cyclopentanone</td>
<td>1820 mg/kg (Rat)</td>
<td>&gt;2000 mg/kg (rabbit)</td>
<td>19.5 mg/l (Rat)</td>
</tr>
<tr>
<td>9003-36-5 Formaldehyde, polymer with (chloromethyl) oxirane and phenol</td>
<td>&gt;2000 mg/kg (Rat)</td>
<td>244772-00-7 Cycloaliphatic Epoxy Resin</td>
<td>&gt;2000 mg/kg (Rat)</td>
</tr>
<tr>
<td>26142-30-3 Poly[oxy(methyl-1,2-ethanediyl)], α-(2-oxiranylethyl)-α-(2-oxiranylethoxy)-</td>
<td>&gt;2000 mg/kg (Rat)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
38. 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

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
      \leq 1000 mg/l (algae)
      \leq 1000 mg/l (fish)
      \leq 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)
    - 2530-83-8 [3-(2,3-epoxypropoxy)propyl]trimethoxysilane
      EC50/48 h 30 mg/l (daphnia magna)
      EC50/72 h 255 mg/l (Desmodesmus subsicpatius (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 subsicpatius)
    - LC50/48 hr 2950 mg/L (golden orfe)
    - LC50/96 h >100 mg/l (fish)

- 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.
- Ecototoxic effects:
- Remark: Toxic for fish
- Additional ecological information:
- General notes:
  - Water hazard class 1 (Self-assessment): slightly hazardous for water
Trade name: SU-8 3000 Series Resists

(Contd. of page 8)

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.

· 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, MARINE POLLUTANT
  · IATA
    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

· Environmental hazards:
  · Marine pollutant:
    Yes

· Special precautions for user
  · Danger code (Kemler):
    Warning: Flammable liquids 33

(Contd. on page 10)
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.
    · 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).
Trade name: SU-8 3000 Series Resists

- **Hazard pictograms**
  
  ![Hazard Pictograms](image)

- **Signal word** Warning

- **Hazard-determining components of labeling:**
  
  - Cyclopentanone
  - Formaldehyde, polymer with (chloromethyl)oxirane and 4,4'-(1-methylene)bis[phenol]
  - [3-(2,3-epoxypropoxy)propyl]trimethoxysilane
  - Formaldehyde, polymer with (chloromethyl) oxirane and phenol

- **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.
  - 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/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.
  - P308+P313 IF exposed or concerned: Get medical advice/attention.
  - 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

(Contd. on page 12)
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 / 5

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)
VOC: Volatile Organic Compounds (USA, EU)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent