SECTION 1: Identification of the substance/mixture and of the company/undertaking

· 1.1 Product identifier
  · Trade name: SU-8 2000 Series Resists
  · Article number:
    Y111004, Y111007, Y111014, Y111022, Y111029, Y111045, Y111053, Y111058, Y111064, Y111069, Y111070, Y111072, Y111074, Y111075, Y111077

· 1.2 Relevant identified uses of the substance or mixture and uses advised against
  · Sector of Use SU16  Manufacturing of computer, electronic and optical products, electrical equipment
  · Product category PC30  Photo-chemicals
  · Application of the substance / the mixture Photoresist

· 1.3 Details of the supplier of the safety data sheet
  · Manufacturer/Supplier:
    Manufacturer:
    Kayaku Advanced Materials
    200 Flanders Road
    Westborough, MA 01581
    Telephone: (617) 965-5511
    Fax: (617) 965-5818

  Importer:
  A-Gas Electronic Materials
  Unit 3, IO Centre
  Swift Valley
  Rugby, Warwickshire
  CV21 1TW, UK
  Tel: +44-0-1788-537535
  Fax: +44-0-1788-535835
  Website: www.agasem.com
  Email: customerservice.em@agas.com

· Further information obtainable from:
  Product Safety
  Email: productssafety@kayakuAM.com

· 1.4 Emergency telephone number:
  Kayaku Advanced Materials : 617-965-5511
  Chemtrec 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

Flam. Liq. 3  H226 Flammable liquid and vapour.

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

(Contd. on page 2)
53.1.30

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.
- Hazard pictograms

GHS02  GHS07  GHS09

- Signal word Warning
- Hazard-determining components of labelling:
  Epoxy resin
  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 vapour.
  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.

2.3 Other hazards

- Results of PBT and vPvB assessment
- PBT: Not applicable.
SECTION 3: Composition/information on ingredients

3.2 Chemical characterisation: Mixtures

Description: Mixture of substances listed below with nonhazardous additions.

Dangerous components:

<table>
<thead>
<tr>
<th>Substance</th>
<th>Description</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epoxy resin</td>
<td>Skin Irrit. 2, H315; Eye Irrit. 2, H319; Skin Sens. 1, H317</td>
<td>3-75%</td>
</tr>
<tr>
<td>Cyclopentanone</td>
<td>Flam. Liq. 3, H226; Skin Irrit. 2, H315; Eye Irrit. 2, H319</td>
<td>13-96%</td>
</tr>
<tr>
<td>Sulfonium, diphenyl[4-(phenylthio)phenyl]-, (OC-6-11)-hexafluoroantimonate(1-) (1:1)</td>
<td>Aquatic Acute 1, H400; Aquatic Chronic 1, H410; Skin Sens. 1, H317</td>
<td>0.25-2.5%</td>
</tr>
<tr>
<td>Propylene carbonate</td>
<td>Skin Irrit. 2, H315; Eye Irrit. 2, H319</td>
<td>0.3-5%</td>
</tr>
<tr>
<td>Sulfonium, (thiodi-4,1-phenylene) bis[diphenyl-, (OC-6-11)-hexafluoroantimonate (1-) (1:2)</td>
<td>Aquatic Acute 1, H400; Aquatic Chronic 1, H410; Skin Sens. 1, H317</td>
<td>0.25-2.5%</td>
</tr>
</tbody>
</table>

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: Immediately remove any clothing soiled by the product.
After inhalation: In case of unconsciousness place patient stably in side position for transportation.
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, 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: If symptoms persist consult doctor.

4.2 Most important symptoms and effects, both acute and delayed No further relevant information available.

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).
  Dispose contaminated material as waste according to item 13.
  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.
- 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.
  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 oxidising and acidic materials.
  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.
SECTIONS 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
  - Colour: Clear to light yellow
  - Odour: Sweetish
  - Odour threshold: Not determined.
- pH-value: Not determined.

- Change in condition
  - Melting point/freezing point: Undetermined.
  - Initial boiling point and boiling range: 130 °C

(Contd. on page 6)
SECTION 10: Stability and reactivity

10.1 Reactivity: No further relevant information available.

10.2 Chemical stability

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 Acids, Strong Bases
· 10.6 Hazardous decomposition products:
  Carbon monoxide
  Corrosive gases/vapours
  Danger of forming toxic pyrolysis products.
  Antimony oxide

SECTION 11: Toxicological information

· 11.1 Information on toxicological effects
· Acute toxicity Based on available data, the classification criteria are not met.
· 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)
· 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)
· 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.
**SECTION 12: Ecological information**

### 12.1 Toxicity

**Aquatic toxicity:**

<table>
<thead>
<tr>
<th>Epoxy resin</th>
<th>LC50/24 h</th>
<th>LC50/48 hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>£1000 mg/l (algae)</td>
<td>4.4 mg/l (daphnia)</td>
<td>0.68 mg/L (daphnia)</td>
</tr>
<tr>
<td>£1000 mg/l (fish)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>£1000 mg/l (invertebrates)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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)

### 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:

- 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.

### 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: 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)]-
### SECTION 15: Regulatory information

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
  No further relevant information available.
- **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.

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

<table>
<thead>
<tr>
<th>14.3 Transport hazard class(es)</th>
<th>hexafluoroantimonate (1-) (1:2)), MARINE POLLUTANT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ADR, IMDG, IATA</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Class</strong></td>
<td>3 Flammable liquids.</td>
</tr>
<tr>
<td><strong>Label</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>14.4 Packing group</strong></td>
<td>ADR, IMDG, IATA</td>
</tr>
<tr>
<td><strong>Label</strong></td>
<td>III</td>
</tr>
<tr>
<td><strong>14.5 Environmental hazards:</strong></td>
<td>Marine pollutant: Yes</td>
</tr>
<tr>
<td><strong>14.6 Special precautions for user</strong></td>
<td>Warning: Flammable liquids.</td>
</tr>
<tr>
<td><strong>Hazard identification number (Kemler code):</strong></td>
<td>30</td>
</tr>
<tr>
<td><strong>EMS Number:</strong></td>
<td>F-E,S-D</td>
</tr>
<tr>
<td><strong>Stowage Category</strong></td>
<td>A</td>
</tr>
<tr>
<td><strong>14.7 Transport in bulk according to Annex II of Marpol and the IBC Code</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Transport/Additional information:</strong></td>
<td>ADR</td>
</tr>
<tr>
<td><strong>Limited quantities (LQ)</strong></td>
<td>5L</td>
</tr>
<tr>
<td><strong>Excepted quantities (EQ)</strong></td>
<td>Code: E1</td>
</tr>
<tr>
<td></td>
<td>Maximum net quantity per inner packaging: 30 ml</td>
</tr>
<tr>
<td></td>
<td>Maximum net quantity per outer packaging: 1000 ml</td>
</tr>
<tr>
<td><strong>Transport category</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>Tunnel restriction code</strong></td>
<td>D/E</td>
</tr>
<tr>
<td><strong>IMDG</strong></td>
<td>5L</td>
</tr>
<tr>
<td><strong>Limited quantities (LQ)</strong></td>
<td>Code: E1</td>
</tr>
<tr>
<td><strong>Excepted quantities (EQ)</strong></td>
<td>Maximum net quantity per inner packaging: 30 ml</td>
</tr>
<tr>
<td></td>
<td>Maximum net quantity per outer packaging: 1000 ml</td>
</tr>
<tr>
<td><strong>UN &quot;Model Regulation&quot;:</strong></td>
<td>UN1866, RESIN SOLUTION, 3, III</td>
</tr>
</tbody>
</table>
· Relevant phrases
  H226 Flammable liquid and vapour.
  H315 Causes skin irritation.
  H317 May cause an allergic skin reaction.
  H319 Causes serious eye irritation.
  H400 Very toxic to aquatic life.
  H410 Very toxic to aquatic life with long lasting effects.

· Department issuing SDS: Product safety department
· Contact: Tom Cole, EHS Manager (tcole@kayakuAM.com)
· 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
  Skin Irrit. 2: Skin corrosion/irritation – Category 2
  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