

MICRO • CHEM
SAFETY DATA SHEET

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Rev. Date: 13 April 2009

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION -----

PRODUCT USE: Organic Resin Solution
TRADE NAME: SU-8 3000 Series Resists
PRODUCT #: See Table 1 – Section 9

SUPPLIER: MicroChem Corporation
 90 Oak Street, PO Box 426
 Newton, MA 02464-0002

TELEPHONE: (617) 965-5511
FAX: (617) 965-5818
CHEMTREC USA
EMERGENCY #: (800) 424-9300
CHEMTREC INTL
EMERGENCY #: (703) 527-3887
MSDS DATE: 18 December 2008
REVISION DATE: 13 April 2009

SECTION 2. HAZARDS IDENTIFICATION -----

Hazardous Classification

Acute hazards aquatic env – Category 2
Acute toxicity (oral) - Category 4
Acute toxicity (inhalation – gas/vapour) – Category 4
Flammable liquids - Category 3
Germ cell mutagenicity – Category 2
Serious eye damage/eye irritation - Category 2A
Skin corrosion/irritation - Category 2
Skin Sensitizer – Category 1
Target organ systemic toxicant single exp - Category 3



Signal Word: **WARNING!**

Hazards

Toxic to aquatic life.
Flammable liquid and vapour
Causes serious eye irritation.
Causes skin irritation.
Harmful if inhaled.
Harmful if swallowed.
May cause an allergic skin reaction.
May cause drowsiness and dizziness.
May cause respiratory irritation.
Suspected of causing genetic defects.

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Precautions

Avoid release to the environment.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Wash hands thoroughly after handling.
Contaminated work clothing should not be allowed out of the workplace.
Do not breathe mist or vapors.
Keep away from heat, sparks and open flame. - No smoking.
Use explosion-proof equipment.
Wear protective gloves and eye/face protection.
Take precautionary measures against static discharge.
In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
Take off contaminated clothing as wash before re-use.
Rinse mouth.
Call a POISON CENTRE or doctor/physician if you feel unwell.
Is skin irritation or rash occurs, seek medical advice/attention.
Use extinguishing measures that are appropriate to local circumstances

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENTS: Cyclopentanone (CAS: 120-92-3); 20-60%.
Mixed Triarylsulfonium/ Hexafluoroantimonate Salt;
(CAS:89452-37-9)/(CAS:71449-78-0); 1-5%
Propylene Carbonate (CAS: 108-32-7); 1-5%
Epoxy Resin (CAS: 28906-96-9); 35-80%
Formaldehyde Polymer (CAS: 9003-36-5); 1-30%
Cycloaliphatic Epoxy Resin (CAS: 244772-00-7); 1-30%
Proprietary polyglycidyl ether; <5%
Proprietary silane; <2%
Proprietary surfactant; <1%

SECTION 4. FIRST AID MEASURES

INHALATION: If respiratory irritation or distress occurs remove victim to fresh air and seek medical attention.
INGESTION: Do not induce vomiting unless instructed to do so by a physician. Wash out mouth with water and keep at rest. Seek immediate medical attention.
SKIN CONTACT: In case of contact, immediately wash with plenty of soap and water for at least 15 minutes. Seek medical attention. Remove contaminated clothing and shoes. Clean contaminated clothing and shoes before re-use.
EYE CONTACT: Hold eyelids open and flush with a steady, gentle stream of water for at least 15 minutes. Seek medical attention.

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SECTION 5. FIRE-FIGHTING MEASURES

EXTINGUISHING

MEDIA: Dry chemical, carbon dioxide, alcohol foam, and universal foam.

SPECIAL FIRE FIGHTING PRECAUTIONS:

Firefighters should wear NIOSH/MSHA approved self-contained breathing apparatus and full protective clothing. Remove all ignition sources if it can be done safely.

UNUSUAL FIRE OR EXPLOSION HAZARDS:

Product will burn under fire conditions. Containers may explode (due to build-up of pressure) when exposed to extreme heat. Vapors may travel a considerable distance to a source of ignition and flash back along vapor trail.

SECTION 6. ACCIDENTAL RELEASE MEASURES

EVACUATION

PROCEDURES & SAFETY: Wear appropriate protective gear for the situation. See Personal Protection information in Section 8.

CLEANUP & DISPOSAL OF SPILL:

Absorb with an inert absorbent. Sweep up and place in an appropriate closed container (see Section 7). Clean up residual material by washing area with water. Collect washings for disposal.

ENVIRONMENTAL &

REGULATORY REPORTING: Do not flush to drain. If required proper authorities should be notified.

SECTION 7. HANDLING AND STORAGE

PRECAUTIONS: Store container tightly closed in well-ventilated place.

STORAGE: Store in tightly closed container in a cool, dry, well-ventilated environment away from direct sunlight and ignition sources. Recommended container materials are polyethylene or glass.

HANDLING: Use only under yellow light.
Keep away from heat, sparks, and flames.
Use only with mechanical exhaust.
Do not contact with skin, eyes, and clothing. Severe eye irritant.
Avoid prolonged or repeated contact with skin.
Do not breathe vapors or mist.
Wear heavy rubber gloves.
Wash with soap and water after handling.
Have safety shower and eye wash available.

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SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

OCCUPATIONAL
EXPOSURE LIMITS: None Established

RESPIRATORY
PROTECTION: When respirators are required, select NIOSH/MSHA approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or industrial recommendations.

VENTILATION: General area dilution/exhaust ventilation.

SKIN PROTECTION: Skin contact should be minimized through the use of gloves and suitable long-sleeved clothing.

EYE PROTECTION: Eye contact should be prevented through use of chemical safety glasses with side shields or splash proof goggles.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Pale yellow to clear
ODOR: Pleasant
BOILING POINT: Cyclopentanone: 130°C (266°F)
SPECIFIC GRAVITY: See Table 1
VAPOR PRESSURE: 8.7 mm @ 20 °C (68 °F)
H₂O SOLUBILITY: No data
% VOLATILES: See Table 1
EVAPORATION RATE: 1 (BuAc=1)
FLASH POINT: Cyclopentanone: 30°C (86°F) TCC
AUTOIGNITION TEMP: Cyclopentanone: 550°C (1022°F)
FLAMMABILITY LIMITS: 1.3 lower (vol./vol. %)
Unk. upper

Table 1

Name	Product#	Specific Gravity	Volatiles (% by wt.)	VOC (g/L)
SU-8 3005	Y311049	1.075	48-52	538
SU-8 3010	Y311060	1.106	38-42	442
SU-8 3025	Y311072	1.143	26-30	320
SU-8 3035	Y311074	1.150	24-28	300
SU-8 3050	Y311075	1.153	22-27	288

SECTION 10. STABILITY AND REACTIVITY

STABILITY: Stable
INCOMPATIBILITY: Strong Oxidizing Agents, Strong Bases, Strong Acids, Strong Reducing Agents, Iron, Hydrazine
HAZARDOUS POLYMERIZATION: May occur. Avoid extreme pH.
HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS: Oxides of carbon.

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SECTION 11. TOXICOLOGICAL INFORMATION

Routes of Entry: Inhalation, ingestion, eye and skin contact

Symptoms of Exposure: Causes severe eye irritation. Causes skin irritation. May cause skin sensitization. May cause upper respiratory tract irritation, central nervous system depression, shortness of breath, drowsiness and confusion.

Acute Toxicity

Acute Oral Toxicity

Component: Cyclopentanone
LD50 rat 1180 mg/kg
Component: Propylene Carbonate
LD50 rat 20,700 mg/kg
Component: Proprietary Polyglycidyl Ether
LD50 rat >2000 mg/kg
Component: Cycloaliphatic Epoxy Resin
LD50 rat 2000 mg/kg
Component: Proprietary Silane
LD50 rat 7010 mg/kg
Component: Proprietary Surfactant
LD50 rat >5000 mg/kg
Component: Epoxy Resin
LD50 rat >2000 mg/kg

Acute Dermal Toxicity

Component: Cyclopentanone
LD50 rabbit >5000 mg/kg
Component: Propylene Carbonate
LD50 Rabbit > 20,000 mg/kg
Component: Epoxy Resin
LD50 rat >2000 mg/kg

Acute Inhalation Toxicity

Component: Cyclopentanone
LC50 rat 19.5 mg/l
Component: Propylene Carbonate
No data found
Component: Proprietary Silane
LD50 rat 5.3 mg/l

Specific Concentration Limits

The values listed below represent the percentages of ingredients of unknown toxicity:

27% Acute oral toxicity

35% Acute dermal toxicity

38% Acute inhalation toxicity

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Skin corrosion/irritation

Component: Cyclopentanone
Acute Skin Irritation: skin irritation, 500mg, rabbit. Mildly irritating

Component: Propylene Carbonate
Acute Skin Irritation: Moderate skin irritant

Component: Mixed Triarylsulfonium/ Hexafluoroantimonate Salt
Acute Skin Irritation: Slight skin irritation

Component: Proprietary Polyglycidyl Ether
Acute Skin Irritation: no skin irritation

Component: Cycloaliphatic Epoxy Resin
Acute Skin Irritation: Causes skin irritation

Component: Proprietary Surfactant
Acute Skin Irritation: No skin irritation based on animal studies

Component: Epoxy Resin
Acute Skin Irritation: Expected to cause skin irritation

Component: Formaldehyde Polymer
Acute Skin Irritation: Causes skin irritation

Serious eye damage/eye irritation

Component: Cyclopentanone
Acute Eye Irritation: eye irritation, 100mg, rabbit. Severely irritating.

Component: Propylene Carbonate
Acute Eye Irritation: Moderate eye irritation

Component: Mixed Triarylsulfonium/ Hexafluoroantimonate Salt
Acute Eye Irritation: Eye Irritant

Component: Proprietary Polyglycidyl Ether
Acute Skin Irritation: Causes slight transient irritation

Component: Cycloaliphatic Epoxy Resin
Acute Skin Irritation: Causes eye irritation

Component: Proprietary Surfactant
Acute Skin Irritation: No eye irritation based on animal studies

Component: Epoxy Resin
Acute Skin Irritation: Expected to cause eye irritation

Component: Formaldehyde Polymer
Acute Skin Irritation: Causes eye irritation

Respiratory or Skin Sensitisation

Component: Cyclopentanone
Skin sensitization – guinea pig – not a sensitizer
Skin sensitization – human – not a sensitizer

Component: Propylene Carbonate
Skin sensitization - Did not induce skin sensitization in human patch tests.

Component: Mixed Triarylsulfonium/ Hexafluoroantimonate Salt
Skin sensitization: May cause skin sensitization

Carcinogenicity

Component: Cyclopentanone
Not considered carcinogenic by NTP, IARC, ACGIH or OSHA.

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Germ Cell Mutagenicity

Component: Cyclopentanone
Ames Test – negative with and without metabolic activation
Component: Cycloaliphatic Epoxy Resin
Ames Test- negative with and without metabolic activation
Component: Proprietary Silane
In vivo tests did not show mutagenic activity. In Vitro tests showed mutagenic activity.
Component: Mixed Triarylsulfonium/ Hexafluoroantimonate Salt
Ames Test - This material was mutagenic in the Ames bacterial assay. It is inactive, however, in the in vivo mouse micronucleus test.
Component: Epoxy Resin
Ames Test – This material was mutagenic in the Ames bacterial assay.

Specific Target Organ Systemic Toxicity (single exposure)

Component: Cyclopentanone
Central Nervous system

Specific Target Organ Systemic Toxicity (repeated exposure)

Component: Cyclopentanone
Central Nervous System

Toxicity to Reproduction

Component: Cyclopentanone
No adverse effects to reproduction or adverse developmental effects known.

Aspiration Hazards

No data found.

SECTION 12. ECOLOGICAL INFORMATION

Acute aquatic toxicity

Acute toxicity to fish

Component: Cyclopentanone
48 hr LC50 *Leuciscus idus melanotus*: 2950 mg/L
Component: Propylene Carbonate
96 hr LC50 *Cyprinus Carpi*: >1000 mg/L
Component: Proprietary Silane
96 hr LC50 *Oncorhynchus mykiss* (rainbow trout): 237 mg/L
Component: Epoxy Resin
LC50 Fish: >100 mg/L

Acute toxicity to aquatic invertebrates

Component: Cyclopentanone
24 hr EC50 *Daphnia magna*: 1435 mg/L
Component: Propylene Carbonate
48 hr EC50 *Daphnia magna*: >500 mg/L
Component: Proprietary Silane
48hr EC50 *Daphnia magna*: 324 mg/L

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Component: Epoxy Resin
LC50 Invertebrate: >100 mg/L

Acute toxicity to algae

Component: Cyclopentanone
72 hr EC50 Scenedesmus subspicatus >100 mg/l
Component: Propylene Carbonate
72 hr EC50 green algae >500 mg/l
Component: Proprietary Silane
168hr EC50 Freshwater algae: 119 mg/L
Component: Epoxy Resin
LC50 Algae: >100 mg/L

Specific concentration limits

The values listed below represent the percentages of ingredients of unknown toxicity.

35% Acute aquatic toxicity – fish
35% Acute aquatic toxicity – aquatic invertebrates
35% Acute aquatic toxicity - algae

Chronic aquatic toxicity

Component: Mixed Triarylsulfonium/ Hexafluoroantimonate Salt-Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Avoid release to the environment.

Chronic toxicity to fish

No data found

Chronic toxicity to aquatic invertebrates

No data found

Chronic toxicity to algae

No data found

Persistence/Degradability

Component: Cyclopentanone
Inherently biodegradable

Bioaccumulation

Component: Cyclopentanone
Not expected to bioaccumulate

Mobility

Component: Cyclopentanone
No data found

SECTION 13. DISPOSAL CONSIDERATIONS

Precautions

CONTAINERS MAY BE HAZARDOUS WHEN EMPTY. Since emptied containers retain product residue follow all MSDS and label warnings even after container is emptied. Dispose of contents/container in accordance with local regulation.

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Disposal

Comply with applicable local, state or international regulations regarding the proper disposal of this material and/or containers. Dispose of contents/container in accordance with local regulations.

SECTION 14. TRANSPORTATION INFORMATION

HAZARD CLASSIFICATION: Flammable Liquid
SHIPPING NAME: Resin Solution
UN NUMBER: UN 1866
PACKING GROUP III

SECTION 15. REGULATORY INFORMATION

US AND INTERNATIONAL INFORMATION

Chemical Inventories: All ingredients appear on the TSCA Inventory of Chemical Substances or are compliant with TSCA regulations, EINECS or are compliant with EINECS regulations and the Japan Hazardous Chemical Listing.

SARA Title III: This product contains a chemical subject to SARA Title III, Section 313 Reporting Requirements:

Mixed Triarylsulfonium/ Hexafluoroantimonate Salt;
(CAS: 89452-37-9)/(CAS: 71449-78-0)

Calif. SCAQMD Rule 443.1 VOC's: See Table 1 – Section 9

SECTION 16. OTHER INFORMATION

National Fire Protection Association Hazard Ratings – NFPA:

- 2 Health Hazard Rating
- 3 Flammability Rating
- 0 Reactivity Rating

For additional information contact: productsafety@microchem.com

To the best of our knowledge, the above information is believed to be accurate but does not claim to be all-inclusive and is intended to be used only as a guide. The supplier makes no warranty of any kind, expressed or implied, concerning the use of this product and shall not be held liable for any damage resulting from handling or from contact with the above product. User assumes all risks incident to its use.

MSDS Revision Information: REVISED Toxicological information for epoxy resin. Updated GHS classification.