



1254 Chestnut Street Newton, MA 02464-1418
TEL: (617) 965 - 5511 FAX: (617) 965 - 5818

SU-8 2002

NEGATIVE RADIATION SENSITIVE RESIST

29% in Cyclopentanone

Product No.	Y111029	Lot No.	07020133
Expiration	3/1/2008	Manufactured	2/1/2007

CERTIFICATE OF ANALYSIS

MicroChem Corp. has completed the analysis of the above lot of material with the results listed below.

	<u>Specification</u>	<u>Result</u>
Appearance	Clear, yellow	Clear, yellow
Solids Content, %	29.00 +/- 0.50	29.27
Viscosity at 25° C, cst	7.50 +/-0.26	7.54
Filtration Level	0.2 µm	0.2 µm

MicroChem Corp. hereby certifies that the above material meets all specifications for this product and conforms to our Quality Assurance requirements.

Certified by:

26-Feb-07

Thomas Quinney
QC Supervisor



1254 Chestnut Street
Newton, MA 02464-1418
Tel: (617) 965-5511
Fax: (617) 965-5818

MATERIAL SAFETY DATA SHEET

PAGE 1
29 Aug 2006

SECTION 1. CHEMICAL IDENTIFICATION -----

CHEMICAL NAME: Organic Resin Solution
TRADE NAME: SU-8 2000 Series Resists
PRODUCT #: See Table 1 – Section 9

SECTION 2. COMPOSITION-----

INGREDIENTS: Cyclopentanone (CAS: 120-92-3); 23-96%.
Mixed Triarylsulfonium/ Hexafluoroantimonate Salt;
(CAS: 89452-37-9)/(CAS: 71449-78-0); 0.3-5%
Propylene Carbonate (CAS: 108-32-7); 0.3-5%
Epoxy Resin (CAS: 28906-96-9); 3-75%

SECTION 3. HAZARD DATA-----

INFLAMMABILITY: Flammable liquid.
SKIN CONTACT: Irritant.
EYE CONTACT: Severe eye irritant.
INGESTION: Harmful if ingested.
INHALATION: Harmful if inhaled.
MUTAGENICITY: Not known to be mutagenic.
CARCINOGENICITY: Not considered carcinogenic by NTP, IARC, ACGIH and OSHA
TARGET ORGANS: Eyes, Epidermis, Nervous System

SECTION 4. FIRST AID MEASURES-----

INHALATION: Inhalation is not an expected route of exposure. If respiratory irritation or distress occurs remove victim to fresh air. Seek medical attention if respiratory irritation or distress continues.

INGESTION: If victim is conscious and alert, give 2-3 glasses of water to drink and induce vomiting by touching back of throat with a finger. Do not induce vomiting or give anything by mouth to an unconscious person. Seek immediate medical attention. Do not leave victim unattended. Vomiting may occur spontaneously. To prevent aspiration of swallowed product, lay victim on side with head lower than waist. If vomiting occurs and the victim is conscious, give water to further dilute the chemical.

SKIN CONTACT: In case of contact, immediately wash with plenty of soap and water for at least 5 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.

CHEMICAL NAME: Organic Resin Solution
TRADE NAME: SU-8 2000 Series Resist

PRODUCT #: See Table 1 – Section 9

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 PROCEDURES

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. STORAGE AND HANDLING PRECAUTIONS

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.

MATERIAL SAFETY DATA SHEETPAGE 3
29 Aug 2006CHEMICAL NAME: Organic Resin Solution
TRADE NAME: SU-8 2000 Series Resist

PRODUCT #: See Table 1 – Section 9

SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION**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 DATA

APPEARANCE: Pale yellow to clear
 ODOR: Slightly sweet
 BOILING POINT: 130 °C (266 °F)
 SPECIFIC GRAVITY: see Table 1
 VAPOR PRESSURE: 8.7 mm @ 20 °C (68 °F)
 H₂O SOLUBILITY: Slightly soluble
 % VOLATILES: see Table 1
 EVAPORATION RATE: 1 (BuAc=1)
 FLASH POINT: 30 °C (86 °F) TCC
 AUTOIGNITION TEMP: 550 °C (1022 °F)
 FLAMMABILITY LIMITS: 1.3 lower (vol./vol. %)
 SbF₆ Salt (% by wt): Unk. upper
 Sb (% by wt): see Table 1

Table 1

Name	Product#	Specific Gravity	Volatiles (% by wt.)	VOC (g/L)	SbF ₆ Salt (% by wt)	Sb (% by wt)
SU-8 2000.1	Y111004	1.00	94-98	960	<1.0 %	<1.0 %
SU-8 2000.2	Y111007	1.00	90-95	930	<1.0 %	<1.0 %
SU-8 2000.5	Y111014	1.07	85-90	920	<1.0 %	<1.0 %
SU-8 2001	Y111022	1.100	80-85	860	1.1	<1.0 %
SU-8 2002	Y111029	1.123	70-75	800	1.4	<1.0 %
SU-8 2005	Y111045	1.164	50-55	640	2.2	<1.0 %
SU-8 2007	Y111053	1.175	45-50	550	2.5	<1.0 %
SU-8 2010	Y111058	1.187	40-45	500	2.8	<1.0 %
SU-8 2015	Y111064	1.200	35-40	430	3.0	<1.0 %
SU-8 2025	Y111069	1.219	30-35	380	3.3	<1.0 %
SU-8 2035	Y111070	1.227	20-30	370	3.4	<1.0 %
SU-8 2050	Y111072	1.233	20-30	345	3.4	<1.0 %
SU-8 2075	Y111074	1.236	20-30	320	3.5	<1.0 %

MATERIAL SAFETY DATA SHEETPAGE 4
29 Aug 2006CHEMICAL NAME: Organic Resin Solution
TRADE NAME: SU-8 2000 Series Resist

PRODUCT #: See Table 1 – Section 9

SU-8 2100	Y111075	1.237	20-30	310	3.6	<1.0%
SU-8 2150	Y111077	1.238	20-30	285	3.7	<1.0%

SECTION 10. REACTIVITY DATA

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.

SECTION 11. TOXICITY HAZARDS

As cyclopentanone:

Acute Eye Irritation: eye irritation, 100mg, rabbit. Severely irritating.
Acute Skin Irritation: skin irritation, 500mg, rabbit. Mildly irritating.
Acute Dermal Toxicity: LD50 – lethal dose 50% of test species, >5000 mg/kg, rabbit.
Acute Respiratory Irritation: no test data found for product.
Acute Inhalation Toxicity: no test data found for product.
Acute Oral Toxicity: LD50 – lethal dose 50% of test species, 1180 mg/kg, rat.

Mixed Triarylsulfonium/Hexafluoroantimonate Salt/Propylene Carbonate:

This material was mutagenic in the Ames bacterial assay. It is inactive, however, in the in vivo mouse micronucleus test.

SECTION 12. ECOLOGICAL DATA

No data available at this time.

SECTION 13. DISPOSAL CONSIDERATIONS

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

SECTION 14. TRANSPORTATION INFORMATION

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

MATERIAL SAFETY DATA SHEET

PAGE 5
29 Aug 2006

CHEMICAL NAME: Organic Resin Solution
TRADE NAME: SU-8 2000 Series Resist

PRODUCT #: See Table 1 – Section 9

SECTION 15. REGULATORY INFORMATION

EUROPEAN INFORMATION

EINECS LISTED

EC Nos: Cyclopentanone 204-435-9; Propylene Carbonate 203-572-1;
Mixed Triarylsulfonium/ Hexafluoroantimonate Salt 403-500-0

RISK & SAFETY PHRASES

R10 Flammable
R36/38 Irritating to eyes and skin
R43 May cause sensitization by skin contact
R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment
S2 Keep out of the reach of children
S23 Do not breathe gas/fumes/vapour/spray
S24 Avoid contact with the skin
S37 Wear suitable gloves
S60 This material and its container must be disposed of as hazardous waste
S61 Avoid release to the environment. Refer to special instructions/safety data sheets

INDICATIONS OF DANGER

Xi Irritant
N Environmentally Dangerous

US AND INTERNATIONAL INFORMATION

HAZARDOUS LISTINGS: All ingredients appear on the TSCA Inventory of Chemical Substances, the Japan Hazardous Chemical Listing and are EINECS listed or are exempt from EINECS.

SARA Title III: This product IS NOT subject to SARA Title III, Section 313 Reporting Requirements.

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

SECTION 16. ADDITIONAL PRECAUTIONS AND COMMENTS

National Fire Protection Association Hazard Ratings – NFPA:

- 2 Health Hazard Rating – Moderate
- 3 Flammability Rating – Serious
- 0 Instability Rating - Minimal

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.

MATERIAL SAFETY DATA SHEET

PAGE 6
29 Aug 2006

CHEMICAL NAME: Organic Resin Solution
TRADE NAME: SU-8 2000 Series Resist

PRODUCT #: See Table 1 – Section 9

MSDS Revision Information:

- A) Section 8 – Revised Respiratory Protection information.
- B) Section 15 – Added that ingredients are EINECS listed or are exempt from EINECS.
- C) Section 7 – Removed statement “Store and Transfer under a blanket of dry inert gas”.