ELECTRONIC MATERIALS
ROHM HAAS

Material Safety Data Sheet

1. PRODUCT AND COMPANY IDENTIFICATION

MICROPOSIT(TM) STR(TM) 1045 Positive Photoresist

Revision date: 08/31/2004

Supplier

Rohm and Haas Electronic Materials LLC
455 Forest Street
Marlborough, MA 01752 United States of America

For non-emergency information contact: 508-481-7950

Emergency telephone number

Chemtrec	800-424-9300
Rohm and Haas Emergency	215-592-3000

2. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No.	Concentration
Xylene	1330-20-7	1.0 - 5.0 %
Ethyl lactate	97-64-3	54.0 - 59.0 %
Aromatic resin		30.0 - 40.0 %
Butyl Acetate	123-86-4	1.0 - 5.0 %
Cresol	1319-77-3	0.01 - 0.99 %
Diazo Photoactive Compound		1.0 - 10.0 %
Organic Siloxane Surfactant		0.01 - 1.0 %
Ethylbenzene	100-41-4	0.1 - 0.5 %

3. HAZARDS IDENTIFICATION

Emergency Overview

Appearance

Form	viscous liquid
Colour	red
Odour	sweet

Hazard Summary	**CAUTION!** Combustible liquid and vapor. Causes irritation to eyes, nose, and respiratory tract. Prolonged, repeated contact, inhalation, ingestion, or absorption through the skin, may cause toxic effects to internal organ systems (liver, kidney, central nervous system). Contains a material which may cause cancer. Possible birth defect hazard.

Potential Health Effects

Primary Routes of Entry: Inhalation, ingestion, eye and skin contact, absorption.

Eyes: May cause pain, transient irritation and superficial corneal effects.

Skin: Material may cause irritation.
Prolonged or repeated exposure may have the following effects:
defatting of skin leading to irritation and dermatitis
central nervous system depression
liver damage
kidney damage
blood disorders
adverse reproductive effects

Ingestion: Swallowing may have the following effects:
irritation of mouth, throat and digestive tract
headache
nausea
vomiting
Repeated doses may have the following effects:
central nervous system depression
liver damage
kidney damage
blood disorders
adverse reproductive effects

Inhalation: Inhalation may have the following effects:
irritation of nose, throat and respiratory tract
Higher concentrations may have the following effects:
systemic effects similar to those resulting from ingestion

Target Organs: Eye
Respiratory System
Skin
nervous system
Liver
kidney
Blood
Reproductive System

Carcinogenicity

Xylene	ACGIH	Not classifiable as a human carcinogen.

Xylene	IARC	Classification not possible from current data.
Xylene	IRIS	Not classifiable.
Ethylbenzene	ACGIH	Confirmed animal carcinogen with unknown relevance to humans.
Ethylbenzene	IARC	Possible carcinogen.
Ethylbenzene	IRIS	Not classifiable.

4. FIRST AID MEASURES

Inhalation: Remove from exposure. If there is difficulty in breathing, give oxygen. Seek medical attention if symptoms persist.

Skin contact: Wash skin with water. Continue washing for at least 15 minutes. Obtain medical attention if blistering occurs or redness persists.

Eye contact: Immediately flush the eye with plenty of water for at least 15 minutes, holding the eye open. Obtain medical attention if soreness or redness persists.

Ingestion: Wash out mouth with water. Have victim drink 1-3 glasses of water to dilute stomach contents. Induce vomiting if person is conscious. Immediate medical attention is required Never administer anything by mouth if a victim is losing conciousness, is unconcious or is convulsing.

Notes to physician

Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Flash point	39 - 40 °C (102.9 - 104.9 °F)
Lower explosion limit	No data available
Upper explosion limit	No data available
Suitable extinguishing media:	Use water spray, foam, dry chemical or carbon dioxide. Keep containers and surroundings cool with water spray.

Specific hazards during fire fighting: This product may give rise to hazardous vapors in a fire. Vapors can travel a considerable distance to a source of ignition and result in flashback.

Special protective equipment for fire-fighters: Wear full protective clothing and self-contained breathing apparatus.

Further information: Pressure may build up in closed containers with possible liberation of combustible vapors.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Wear suitable protective clothing.
Wear respiratory protection.
Eliminate all ignition sources.

Environmental precautions
Prevent the material from entering drains or water courses.
Do not discharge directly to a water source.
Advise Authorities if spillage has entered watercourse or sewer or has contaminated soil or vegetation.

Methods for cleaning up
Contain spills immediately with inert materials (e.g., sand, earth).
Transfer into suitable containers for recovery or disposal.
Finally flush area with plenty of water.

7. HANDLING AND STORAGE

Handling
Use local exhaust ventilation. Avoid contact with eyes, skin and clothing. Keep container tightly closed.
Further information on storage conditions: Keep away from heat, sparks, flame, and other sources of ignition. Practice good personal hygiene to prevent accidental exposure.

Storage
Storage conditions: Store in original container. Keep away from heat and sources of ignition.
Storage area should be: cool dry well ventilated out of direct sunlight

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limit(s)

Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value
Xylene	Rohm and Haas	TWA	50 ppm
	Rohm and Haas	STEL	75 ppm
	Rohm and Haas	Absorbed via skin	
	ACGIH	TWA	100 ppm
	ACGIH	STEL	150 ppm
	OSHA_TRANS	PEL	435 mg/m3 100 ppm
	Z1A	TWA	435 mg/m3 100 ppm
	Z1A	STEL	655 mg/m3 150 ppm

Component	Regulation	Type of listing	Value
Ethyl lactate	Rohm and Haas	TWA	5 ppm
	Rohm and Haas	STEL	15 ppm

Component	Regulation	Type of listing	Value
Butyl Acetate	Rohm and Haas	TWA	150 ppm
	Rohm and Haas	STEL	200 ppm
	ACGIH	TWA	150 ppm
	ACGIH	STEL	200 ppm
	OSHA_TRANS	PEL	710 mg/m3 150 ppm

Component	Regulation	Type of listing	Value
Cresol	ACGIH	TWA	22 mg/m3 5 ppm

	ACGIH	Skin	
	OSHA_TRANS	PEL	22 mg/m3 5 ppm
	OSHA_TRANS	Skin	

Component	Regulation	Type of listing	Value
Ethylbenzene	Rohm and Haas	TWA	50 ppm
	Rohm and Haas	STEL	75 ppm
	ACGIH	TWA	434 mg/m3 100 ppm
	ACGIH	STEL	543 mg/m3 125 ppm
	OSHA_TRANS	PEL	435 mg/m3 100 ppm

Eye protection: goggles

Hand protection: Butyl rubber gloves. Other chemical resistant gloves may be recommended by your safety professional.

Skin and body protection: Normal work wear.

Respiratory protection: Respiratory protection if there is a risk of exposure to high vapor concentrations. The specific respirator selected must be based on the airborne concentration found in the workplace and must not exceed the working limits of the respirator.

Engineering measures: Engineering methods to prevent or control exposure are preferred. Methods include process or personnel enclosure, mechanical ventilation (local exhaust), and control of process conditions.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	viscous liquid
Colour	red
Odour	sweet
pH	ca.7
Boiling point/range	>119 °C (246 °F)
Flash point	39 - 40 °C (102.9 - 104.9 °F)
Lower explosion limit	No data available
Upper explosion limit	No data available

Component: **Ethyl lactate**
Vapour pressure 1.7 mmHg at 20 °C

Component: **n-Butyl acetate**
Vapour pressure 15.0 mmHg at 25 °C

Relative vapour density	Heavier than air.
Water solubility	slightly soluble
Relative density	1.09
Evaporation rate	Slower than ether
VOC's	685.32 g/l

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Hazardous reactions Stable under normal conditions.

Conditions to avoid High temperatures Static discharge

Materials to avoid Oxidizing agents bases acids

Hazardous decomposition products Carbon monoxide, carbon dioxide,

polymerization Will not occur.

11. TOXICOLOGICAL INFORMATION

Toxicological information on this product or its components appear in this section when such data is available.

Component: **Xylene**
Acute oral toxicity LD50 rat 4,300 mg/kg

Component: **Ethyl lactate**
Acute oral toxicity LD50 rat >2,000 mg/kg

Component: **n-Butyl acetate**
Acute oral toxicity LD50 rat 13,100 mg/kg

Component: **Cresol**
Acute oral toxicity LD50 rat 2,737 mg/kg

Component: **Organic Siloxane Surfactant**
Acute oral toxicity LD50 rat > 5,000 mg/kg

Component: **Ethylbenzene**
Acute oral toxicity LD50 rat 3,500 mg/kg

Component: **Xylene**
Acute inhalation toxicity LC50 rat 4 h 29.09 mg/l

Component: **Ethyl lactate**
Acute inhalation toxicity LC50 rat >5,400 mg/m3

Component: **n-Butyl acetate**
Acute inhalation toxicity LC50 rat 4 h 760 mg/m3

Component: **Cresol**
Acute inhalation toxicity LC50 rat 8 h 35.38 mg/l

Component: **Ethylbenzene**

Acute inhalation toxicity LC50 rat 17.375 mg/l

Component: **Xylene**
Acute dermal toxicity LD50 rabbit >4,300 mg/kg

Component: **Ethyl lactate**
Acute dermal toxicity LD50 rat >5,000 mg/kg

Component: **Cresol**
Acute dermal toxicity LD50 rabbit > 5,000 mg/kg

Component: **Organic Siloxane Surfactant**
Acute dermal toxicity LD50 rat > 2,000 mg/kg

Component: **Ethylbenzene**
Acute dermal toxicity LD50 rabbit > 15,000 mg/kg

Component: **Xylene**
Skin irritation rabbit Moderate irritation.

Component: **Ethyl lactate**
Skin irritation A single application to rabbit skin produced mild irritation.

Component: **Organic Siloxane Surfactant**
Skin irritation A single application to rabbit skin produced mild irritation.

Component: **Xylene**
Eye irritation rabbit moderate to severe.

Component: **Ethyl lactate**
Eye irritation Single application to the rabbit eye produced conjunctival irritation.

Component: **Organic Siloxane Surfactant**
Eye irritation Single application to the rabbit eye produced no signs of ocular irritation.

Component: **Xylene**
Subchronic toxicity Animal studies indicate prolonged inhalation exposures may cause the following:
brain damage

Component: **Xylene**
Toxicity to reproduction
In laboratory studies, birth defects, increased fetal lethality and delayed fetal development have been observed in offspring of female animals exposed during pregnancy.
Component: **Ethyl lactate**
Toxicity to reproduction
No adverse reproductive effects were observed in experimental animals.
Component: **Cresol**
Toxicity to reproduction
Developmental effects were seen in laboratory animals only at dose levels that were maternally toxic.
Component: **Ethylbenzene**
Subchronic toxicity IARC assessment: this product is possibly carcinogenic to humans (Group 2B).

Component: **Ethylbenzene**

Carcinogenicity: This product contains ethylbenzene. A study conducted by the National Toxicology Program states that lifetime inhalation exposure of rats and mice to high concentrations of ethylbenzene (750 ppm) resulted in increases in certain types of cancer, including kidney tumors in rats and lung and liver tumors in mice. Incidences of testicular adenoma were increased along with increased incidences of thyroid effects in rats at 750 ppm; pituitary effects were observed in female mice at 250 ppm. These effects were not observed in animals exposed to lower concentrations of ethylbenzene (75 ppm). The study does not address the relevance of these results to humans.

Component: **Ethylbenzene**

Toxicity to reproduction

Inhalation

12. ECOLOGICAL INFORMATION

Ecotoxicological information on this product or its components appear in this section when such data is available.

Xylene

Ecotoxicity effects

Toxicity to fish	LC50 Rainbow trout (Oncorhynchus mykiss) 96 h 13.5 mg/l
Toxicity to aquatic invertebrates	EC50 Daphnia magna 150 mg/l

Ethyl lactate

Ecotoxicity effects

Toxicity to aquatic invertebrates	EC50 Daphnia magna 48 h 683 mg/l

n-Butyl acetate

Ecotoxicity effects

Toxicity to fish	LC50 Bluegill sunfish (Lepomis macrochirus) 96 h 100 mg/l
Toxicity to fish	LC50 Fathead minnow (Pimephales promelas) 96 h 18 mg/l
Toxicity to algae	EC50 Algae (Scenedesmus subspicatus) 72 h 675 mg/l
Toxicity to aquatic invertebrates	LC50 Daphnia magna 96 h 44 - 205 mg/l

Ethylbenzene

Ecotoxicity effects

Toxicity to fish	LC50 Rainbow trout (Oncorhynchus mykiss) 96 h 4.2 mg/l
Toxicity to algae	EC50 Algae (Selenastrum capricornutum) 72 h 4.6 mg/l

Toxicity to aquatic invertebrates	EC50 Daphnia magna 48 h 2.1 mg/l

13. DISPOSAL CONSIDERATIONS

Environmental precautions: Prevent the material from entering drains or water courses.
Do not discharge directly to a water source.
Advise Authorities if spillage has entered watercourse or sewer or has contaminated soil or vegetation.

Disposal

Dispose in accordance with all local, state (provincial), and federal regulations. Incineration is the recommended method of disposal for containers. Under RCRA, it is the responsibility of the product's user to determine at the time of disposal, whether the product meets RCRA criteria for hazardous waste. This is because the product uses, transformations, mixtures, processes, etc. may render the resulting materials hazardous.
Do not remove label until container is thoroughly cleaned. Empty containers may contain hazardous residues. This material and its container must be disposed of in a safe way.

14. TRANSPORT INFORMATION

DOT

Not regulated per 49CFR 173.150(f)(2)

IMO/IMDG

Proper shipping name	RESIN SOLUTION
UN-No	UN 1866
Class	3
Packing group	III

Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations

15. REGULATORY INFORMATION

SARA TITLE III: Section 311/312 Categorizations (40CFR370): Immediate, delayed, flammability hazard

SARA TITLE III: Section 313 Information (40CFR372)

This product contains a chemical which is listed in Section 313 at or above de minimis concentrations.

SARA Title III Components:	Ethylbenzene	100-41-4
	Xylene	1330-20-7

U.S. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D):

U.S. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)
This product does not contain any substances subject to Section 12(b) export notification.

US. Toxic Substances Control Act (TSCA) All components of this product are in compliance with the inventory listing requirements of the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

California (Proposition 65)
This product contains a component or components known to the state of California to cause cancer:
Components: Ethylbenzene 100-41-4

16. OTHER INFORMATION

Hazard Rating

	Health	Fire	Reactivity
NFPA	2	2	0

Legend

ACGIH	American Conference of Governmental Industrial Hygienists
BAc	Butyl acetate
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
STEL	Short Term Exposure Limit (STEL):
TLV	Threshold Limit Value
TWA	Time Weighted Average (TWA):
|	Bar denotes a revision from prior MSDS.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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