MATERIAL SAFETY DATA SHEET
MICROPOSIT S1813 PHOTO RESIST
41280 4.00 US US 11.06.1998 MSDS_US

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Code	41280
Trade Name	MICROPOSIT S1813 PHOTO RESIST
Manufacturer/Supplier	Shipley Company
Address	455 Forest St. Marlborough, Massachusetts 01752
Phone Number	(508) 481-7950
Emergency Phone Number	(508) 481-7950
Chemtrec #	(800) 424-9300
MSDS first issued	2 July 1996
MSDS data revised	11 June 1998
Prepared By:	Amy C. Nichols
Local Sales Company	Shipley Company, 455 Forest Street, Marlboro, MA 01752 (508-481-7950)

2. COMPOSITION/INFORMATION ON THE INGREDIENTS

Components in Product

Component Name	CAS# / Codes	Concentration
Electronic grade propylene glycol monomethyl ether acetate	108-65-6	71.00 - 76.00
Mixed cresol novolak resin		10.00 - 20.00
Fluoroaliphatic Polymer Esters		0.01 - 1.00
Diazo Photoactive Compound		1.00 - 10.00
cresol	1319-77-3	0.01 - 0.99

3. HAZARD IDENTIFICATION

Main Hazards	- Irritant - Combustible - Nervous System - Skin - Eye - Kidney - Liver
Routes of Entry	Inhalation, ingestion, eye and skin contact, absorption.
Carcinogenic Status	Not considered carcinogenic by NTP, IARC and OSHA
Target Organs	- Nervous System - Skin - Eye - Liver - Kidney
Health Effects - Eyes	Liquid or vapor may cause pain, transient irritation and superficial corneal effects.
Health Effects - Skin	Material may cause slight irritation on prolonged or repeated contact. Repeated and/or prolonged contact may lead to: -

3. HAZARD IDENTIFICATION

	drowsiness - liver damage - kidney damage
Health Effects - Ingestion	A large dose may have the following effects: - drowsiness - liver damage - kidney damage
Health Effects - Inhalation	Exposure to vapor at high concentrations may have the following effects: - irritation of nose, throat and respiratory tract - liver damage - kidney damage

4. FIRST AID MEASURES

First Aid - Eyes	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.
First Aid - Skin	Wash skin with water. Obtain medical attention if blistering occurs or redness persists.
First Aid - Ingestion	Wash out mouth with water. Obtain medical attention.
First Aid - Inhalation	Remove from exposure. If there is difficulty in breathing, give oxygen. Seek medical attention if symptoms persist.
Advice to Physicians	Treat symptomatically.

5. FIRE FIGHTING MEASURES

Extinguishing Media	Use water spray, foam, dry chemical or carbon dioxide. Keep containers and surroundings cool with water spray.
Special Fire-Fighting Procedures	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.
Unusual Fire & Explosion Hazards	Pressure may build up in closed containers with possible liberation of combustible vapors.
Protective Equipment for Fire-Fighting	Wear full protective clothing and self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Spill Procedures	Contain and absorb using earth, sand or other inert material. Transfer into suitable containers for recovery or disposal. Finally flush area with plenty of water.
Personal Precautions	Wear appropriate protective clothing. Wear respiratory protection. Eliminate all sources of ignition.
Environmental Precautions	Prevent the material from entering drains or water courses.

7. HANDLING AND STORAGE

Handling	Use local exhaust ventilation. Avoid contact with eyes, skin and clothing. Keep container tightly closed when not in use.
Storage	Store in original containers. Store away from sources of heat or ignition. Storage area should be: - cool - dry - well ventilated - out of direct sunlight

Other
Proprietary photoresist film contains approximately 2-4% of 2,3,4-trihydroxybenzophenone(THBP), which may sublime during soft-bake or hard-bake processing. THBP has low acute toxicity (LD50>5g/kg). Contact with eyes, skin or mucous membranes cause irritation.

To prevent accumulation of THBP on equipment surfaces and ventilation ducts, preventative maintenance program including regular cleaning should be implemented. Wipe surfaces using an appropriate cleaning solvent when possible. Provide adequate general or local exhaust ventilation during the cleaning process. In situations where this is not possible or where solvent or dust concentrations become excessive, use an air purifying respirator with an organic vapor/toxic particulate cartridge. When cleaning residual THBP, wear protective gloves and adequate protective clothing to prevent skin contact. Practice good personal hygiene to prevent accidental exposure. Clean all protective clothing and equipment thoroughly after each use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Standards

Electronic grade propylene glycol monomethyl ether acetate	Manufacturer recommends 30ppm 8h TWA and 90ppm 15 min STEL.
cresol	ACGIH: TLV 5ppm (22mg/m3) 8h TWA. OSHA: PEL 5ppm (22mg/m3) 8h TWA. UK EH40: OES 5ppm (22mg/m3) 8h TWA. Can be absorbed through skin.
Engineering Control 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.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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.
Hand Protection	Butyl rubber gloves.
Eye Protection	Chemical goggles.
Body Protection	Normal work wear.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Viscous liquid
Color	Red
Odor	Sweet
VOC (g/l)	764.7
Specific Gravity	1.04
pH	Neutral
Boiling Range/Point (°C/F)	145.8/295
Flash Point (PMCC) (°C/F)	40.5-46.1 / 105-115
Explosion Limits (%)	Lower limit 1.5 at 20 °C. Upper limit 7.0 at 20 C..
Solubility in Water	Insoluble.
Vapor Density (Air = 1)	Heavier than air.
Evaporation Rate	Slower than ether
Vapor Pressure	Propylene Glycol Monomethyl Ether Acetate: 3.7 mmHg at 20 °C.

10. STABILITY AND REACTIVITY

Stability	Stable under normal conditions.
Conditions to Avoid	- High temperatures - Static discharge
Incompatibilities	- Oxidizing agents
Hazardous Polymerization	Will not occur.
Hazardous Decomposition Products	- oxides of carbon - oxides of nitrogen - acrid smoke and irritating fumes - phenols - carbon monoxide - toxic fluorine compounds

10. STABILITY AND REACTIVITY

11. TOXICOLOGICAL INFORMATION

Acute Data	Propylene Glycol Monomethyl Ether Acetate: Oral LD50 (rat) 8532mg/kg. Dermal LD50 (rabbit) 5000mg/kg.
Chronic/Subchronic Data	No data.
Genotoxicity	It was not mutagenic when tested in bacterial or mammalian systems.
Reproductive/Developmental Toxicity	Developmental effects were seen in laboratory animals only at dose levels that were maternally toxic.
Additional Data	None known.

12. ECOLOGICAL INFORMATION

Mobility	Propylene Glycol Monomethyl Ether Acetate: Koc is 0 - 50.
Persistence/Degradability	The product is partially or slowly biodegradable. BOD20 greater than 40%
Bio-accumulation	No data.
Ecotoxicity	The product is rated as practically non-toxic to aquatic species. Tests on the following species gave a LC50 of 161mg/litre: - fathead minnows Tests on the following species gave a LC50 of 408mg/litre: - daphnia

13. DISPOSAL CONSIDERATIONS

Product Disposal	Incineration is the recommended method of disposal. Dispose of in accordance with all applicable local and national regulations.
Container Disposal	Labels should not be removed from containers until they have been cleaned. Empty containers may contain hazardous residues. Dispose of containers with care.

14. TRANSPORT INFORMATION

DOT Ground:	Not Regulated per 49 CFR 173.150(f)(2)
UN Proper Shipping Name	Flammable liquid, n.o.s.
UN Class	(3) Flammable Liquid
UN Number	UN1993
UN Packaging Group	III
N.O.S. 1:	Propylene Glycol Monomethyl Ether Acetate
N.O.S. 2:	
Subsidiary Risks	None.
ADR/RID Substance Identification Number	CLASS 3 - 31(c)
CERCLA RQ	Cresol (100#)
Marine Pollutant	No.

15. REGULATORY INFORMATION

TSCA Listed	Yes
TSCA Exemptions	
WHMIS Classification	D.2.B B.3
MA Right To Know Law	All components have been checked for inclusion on the Massachusetts Substance List (MSL). Those components present at the de minimus concentration have been identified in the hazardous ingredients section of the MSDS.
California Proposition 65	This product does not contain materials which the State of California has found to cause cancer, birth defects or other reproductive harm.
SARA TITLE III-Section 311/312 Categorization (40 CFR 370)	Immediate, delayed, flammability hazard
SARA TITLE III-Section 313 (40 CFR 372)	This product does not contain a chemical which is listed in Section 313 at or above de minimis concentrations.

16. OTHER INFORMATION

NFPA Rating- FIRE	2
NFPA Rating- HEALTH	2
NFPA Rating- REACTIVITY	0
NFPA Rating- SPECIAL	None.
Revisions Highlighted	Flash Point (PMCC) (°C/F)

16. OTHER INFORMATION

Abbreviations

CAS#: Chemical Abstract Services Number
ACGIH: American Conference of Governmental Industrial Hygienists
OSHA: Occupational Safety and Health Administration
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
STEL: Short Term Exposure Limit
NTP: National Toxicology Program
IARC: International Agency for Research on Cancer
R: Risk
S: Safety
LD50: Lethal Dose 50%
LC50: Lethal Concentration 50%
BOD: Biological Oxygen Demand
Koc: Soil Organic Carbon Partition Coefficient.
TLm: Median Tolerance Limit

Disclaimer

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