SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Product name MICROPOSIT™ S1805™ G2 POSITIVE PHOTORESIST

Product Use Description Chemical Specialty

Supplier

Local emergency telephone number
021-5838-2516

2. HAZARDS IDENTIFICATION

Hazardous classification
Flammable liquid - Category 3
Serious eye damage/eye irritation - Category 2B
Target Organ Systemic Toxicant - Single exposure - Category 3 - Inhalation
Target Organ Systemic Toxicant - Repeated exposure - Category 2 - Inhalation

Signal word: **WARNING!**

Hazards
Flammable liquid and vapour.
Causes eye irritation.
May cause damage to organs through prolonged or repeated exposure.
May cause drowsiness or dizziness.
May cause respiratory irritation.

Precautions
Prevention
Do not breathe dust, mist or vapors.

Use only in well-ventilated areas.
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Use explosion-proof equipment.
Ground/bond container and receiving equipment.
Wear protective gloves/ eye protection/ face protection.
Take precautionary measures against static discharge.
Vapors can travel to a source of ignition and flash back.

Response
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/ attention.
Wash hands after handling.
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.
Call a POISON CENTRE or doctor/physician if you feel unwell.
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Other hazards
no data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is a mixture.

Component	CAS-No.	Concentration
Electronic grade propylene glycol monomethyl ether acetate	108-65-6	70.0 - 80.0 %
Mixed cresol novolak resin		20.0 - 30.0 %
Diazo Photoactive Compound		1.0 - 10.0 %
Fluorinated Surfactant		< 1.0 %
Cresol	1319-77-3	< 1.0 %
Methoxy-1-propanol acetate	70657-70-4	< 1.0 %

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. 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

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
Cover with absorbent or contain. Collect and dispose.

7. HANDLING AND STORAGE

Precautions
Store locked up.
Store in a well-ventilated place. Keep container tightly closed.
Handling
Use local exhaust ventilation. Avoid contact with eyes, skin and clothing. Keep container tightly closed.

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
Further information on storage conditions: 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

Exposure limit(s)

Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value
Electronic grade propylene glycol monomethyl ether acetate	Rohm and Haas	TWA	30 ppm
	Rohm and Haas	STEL	90 ppm
	Rohm and Haas	Absorbed via skin	
	ECTLV	TWA	275 mg/m3 50 ppm
	ECTLV	STEL	550 mg/m3 100 ppm

	ECTLV	SKIN_DES	

Component	Regulation	Type of listing	Value
Cresol	ACGIH	TWA	5 ppm
	ACGIH	SKIN_DES	
	ECTLV	TWA	22 mg/m3 5 ppm
	CN OEL	TWA	10 mg/m3
	CN OEL	SKIN_DES	
	ACGIH	TWA Inhalable fraction and vapor.	20 mg/m3
	ACGIH	SKIN_DES Inhalable fraction and vapor.	

Exposure controls

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.

Individual protection measures

Eye/face protection: Goggles

Skin protection

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

Other 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.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	liquid
Colour	Red Amber
Odour	ester-like
Odour Threshold	no data available
pH	neutral
Boiling point/boiling range	ca.146 °C
Flash point	ca.40 - 46 °C
Evaporation rate	Slower than ether
Flammability (solid, gas)	no data available
Lower explosion limit	no data available
Upper explosion limit	no data available

Component: **Electronic grade propylene glycol monomethyl ether acetate**

Vapour pressure	0.4932 kPa at 20 °C (68 °F)

Component: **Cresol**

Vapour pressure	0.0226 kPa at 25 °C (77 °F)
Relative vapour density	Heavier than air.
Relative density	ca.1.07
Water solubility	insoluble

Partition coefficient: n-octanol/water	no data available
Autoignition Temperature	no data available
Decomposition temperature	no data available
Viscosity, dynamic	no data available
Solubility in other solvents	no data available
VOC's	642 - 1,038 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 Exposure to sunlight. Heat, flames and sparks. contact with incompatible materials

Materials to avoid Oxidizing agents

Hazardous decomposition products Combustion will generate:, oxides of carbon, nitrogen oxides (NOx), phenols, Hydrogen fluoride, Aldehydes, acrid smoke and irritating fumes,

Polymerisation Will not occur.

11. TOXICOLOGICAL INFORMATION

Exposure routes: Inhalation, ingestion, eye and skin contact, absorption.

Acute toxicity

Acute oral toxicity

Component: **Electronic grade propylene glycol monomethyl ether acetate**
LD50 rat > 5,000 mg/kg

Component: **Fluorinated Surfactant**
LD50 rat > 2,000 mg/kg

Component: **Cresol**
LD50 rat 1,454 mg/kg

Acute dermal toxicity

Component: **Electronic grade propylene glycol monomethyl ether acetate**
LD50 rat > 5,000 mg/kg
LD50 rabbit > 5,000 mg/kg

Component: **Fluorinated Surfactant**
LD50 rabbit > 2,000 mg/kg

Component: **Cresol**
LD50 rabbit 2,000 mg/kg

Acute inhalation toxicity

Component: **Electronic grade propylene glycol monomethyl ether acetate**
LC50 rat 6 h > 24 mg/l

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

Specific concentration limits
The values listed below represent the percentages of ingredients of unknown toxicity.
20 - 30 % Acute oral toxicity
20 - 30 % Acute dermal toxicity
20 - 30 % Acute inhalation toxicity

Skin corrosion/irritation
Component: **Cresol**
rabbit Corrosive

Serious eye damage/eye irritation
Component: **Cresol**
rabbit Corrosive

Sensitisation
no data available

Carcinogenicity
no data available

Mutagenicity

Reproductive Cell Mutagenicity
Component: **Electronic grade propylene glycol monomethyl ether acetate**
No significant mutagenic response was observed and the carcinogenic potential of the material is therefore considered to be low.
Component: **Cresol**
Not mutagenic in Ames Test. In vitro tests showed mutagenic effects

Reproductive toxicity
Component: **Electronic grade propylene glycol monomethyl ether acetate**
Dermal teratology testing of this solvent (with less than 3% beta isomer) revealed no maternally toxic, teratogenic or fetotoxic responses in rats or rabbits exposed to concentrations of 1,000 and 2,000 mg/kg per day.
Component: **Cresol**
Teratogenicity
Developmental effects were seen in laboratory animals only at dose levels that were maternally toxic.
Component: **2-methoxypropyl acetate**
Teratogenicity
Developmental toxin.

Specific Target Organ Systemic Toxicity (Single Exposure)
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
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
Skin: Material may cause irritation.
Prolonged or repeated exposure may have the following effects:
drowsiness
defatting and drying of the skin which can lead to irritation and dermatitis
central nervous system depression

kidney damage
liver damage
Eyes: May cause pain, transient irritation and superficial corneal effects.
Eye
Respiratory System
nervous system
Liver
Kidney
Skin

Specific Target Organ Systemic Toxicity (Repeated Exposure)
no data available
Aspiration Hazard
no data available

Component: **Cresol**
Teratogenicity
Developmental effects were seen in laboratory animals only at dose levels that were maternally toxic.
Component: **2-methoxypropyl acetate**
Teratogenicity
Developmental toxin.

12. ECOLOGICAL INFORMATION

Acute aquatic toxicity

Acute toxicity to fish
Component: **Electronic grade propylene glycol monomethyl ether acetate**
LC50 Fathead minnow (Pimephales promelas) 96 h Method Not Specified
161 mg/l
Component: **Cresol**
LC50 Zebra fish (Danio/Brachydanio rerio) 96 h Method Not Specified
9 mg/l
LC50 Bluegill sunfish (Lepomis macrochirus) 96 h Method Not Specified
10 mg/l
LC50 Pimephales promelas (fathead minnow) 96 h Method Not Specified
12.8 mg/l
Acute toxicity to aquatic invertebrates
Component: **Electronic grade propylene glycol monomethyl ether acetate**
EC50 Daphnia magna (Water flea) 48 h Method Not Specified
>500 mg/l
Component: **Cresol**
LC50 Daphnia 48 h Method Not Specified
33 - 100 mg/l
Acute toxicity to algae
Component: **Electronic grade propylene glycol monomethyl ether acetate**
Growth inhibition EC50 Algae (Selenastrum capricornutum) 72 h Method Not Specified
>1,000 mg/l
Toxicity to bacteria
Component: **Cresol**
EC0 Pseudomonas putida 0.5 h
250 mg/l

Specific concentration limits
The values listed below represent the percentages of ingredients of unknown toxicity.
20 - 30 % Acute aquatic toxicity

Chronic aquatic toxicity

Chronic toxicity to fish
no data available
Chronic toxicity to aquatic invertebrates
no data available
Toxicity to soil-dwelling organisms
no data available
Toxicity to terrestrial plants
no data available
Toxicity to other non-mammalian terrestrial species
no data available

Persistence and Degradability

Biodegradability
Component: **Electronic grade propylene glycol monomethyl ether acetate**
OECD Test Guideline 302B or Equivalent
100 %
10-day Window: Pass

Physico-chemical removability
no data available

Bioaccumulative Potential

Bioaccumulation
Component: **Electronic grade propylene glycol monomethyl ether acetate**
No applicable data.

Mobility in Soil

Partition coefficient: n-octanol/water
Component: **Electronic grade propylene glycol monomethyl ether acetate**
log Pow: 0.43 Method Not Specified see user defined free text
Component: **Cresol**
log Pow: 1.95 Calculated
Distribution among environmental compartments
no data available
Fate and behaviour in the environment
no data available

13. DISPOSAL CONSIDERATIONS

Precautions
Dispose of contents/container in accordance with local regulation.
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.
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

Classification for ROAD and Rail transport:

Proper shipping name	RESIN SOLUTION
UN number	UN 1866
Class	3
Packing group	III

Hazard identification No 30

Classification for SEA transport (IMO-IMDG):

Proper shipping name	RESIN SOLUTION
UN number	UN 1866
Class	3
Packing group	III

Classification for AIR transport (IATA/ICAO):

Consult current IATA regulations prior to shipping by air.

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

15. REGULATORY INFORMATION

China. Inventory of Existing Chemical Substances (IECSC): The inventory status of an intentional component is unknown.

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.

Provisions on the Environmental Administration of New Chemical Substances.

General rule of classification and hazard communication of chemicals (GB 13690)

Law on Prevention and Control of Environmental Pollution Caused by Solid Waste.

The rule on dangerous chemicals safety management

Occupational Exposure Limits for Hazardous Agent in The workshop Chemical Hazardous Agents(GBZ 2.1).

LIST OF DANGEROUS GOODS (GB 12268)

16. OTHER INFORMATION

Emergency telephone number

Asia-Pacific toll free	+800 2537 8747
Asia-Pacific toll	+65 6542 9595
From Indonesia toll free	+803 65 7576
From Pakistan toll free	+800 11065 2 6542 7115
From Sri Lanka (Colombo) toll free	+430 800 2 6542 7115
USA toll	+1 215 592 3000
European Region toll	+33 (0) 1400 25045

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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