

MATERIAL SAFETY DATA SHEET

This MSDS is compatible with ISO 11014 – 1:1994 and conforms to ANSI standard Z400.1 – 1993.

SAFETY DATA SHEET

This SDS complies with 91/155/EEC, 93/112/EC, and 2001/58/EC

Section 1: Chemical Product and Company Identification

CHEMICAL SUPPLIER COMPANY NAME

Shin-Etsu MicroSi, Inc.
 10028 South 51st Street
 Phoenix, AZ 85044

EMERGENCY TELEPHONE

Chemtrec 24 hrs, USA: (800) 424-9300
 Information: (480) 893-8898
 Fax: (480) 893-8637

MANUFACTURER'S NAME: Shin-Etsu MicroSi.
 ADDRESS: 10028 S. 51st Street, Phoenix, Arizona 85044
 TELEPHONE NUMBER: (480) 893-8898

DATE PREPARED: 8/17/2001
 PRODUCT NAMES: **CEM 365IS**
 CHEMICAL NAME: Aqueous Contrast Enhancement Material
 CHEMICAL FAMILY: Organic mixture in H₂O
 FORMULA: Mixture in H₂O

REVISED: Jul 1, 2004

Section 2: Composition, Information on Ingredients

PRODUCT COMPOSITION	APPROX %	ACGIH TLV	OSHA PEL	NIOSH REL	CAS NO.	EINECS	SYMBOL	RISK PHRASE
Water	80-90	None	None	None	7732-18-5	231-791-2	None	None
Luviskol VA-64	5-10	None	None	None	25086-89-9	Yes		
Trade Secret Component 1	TS1	None	None	None	TS1	Yes		
Trade Secret Component 2	TS2	None	None	None	TS2	Yes		
Trade Secret Component 3	TS3	None	None	None	TS3	Yes		
Trade Secret Component 4	TS4	None	None	None	Mixture	Yes		

Some items on this MSDS may be designated as trade secrets. Bonafide requests for disclosure of trade secret information to medical personnel must be made in accordance with the provisions contained in 29 CFR 1910.1200 I 1-13.

The full text for all R-Phrases is shown in Section 16.

Section 3: Hazards Identification

HAZARD CLASSIFICATION: Non-flammable (based on IMO and DOT)
 FIRE AND EXPLOSION: None
 APPEARANCE: Colorless-Transparent

POTENTIAL HEALTH EFFECTS

INHALATION: No problems are expected.
 SKIN CONTACT: May cause mild skin irritation.
 EYE CONTACT: Eye irritation may result.
 INGESTION: May be harmful if swallowed.

NFPA RATINGS:

Component	Health (Blue)	Flammability (Red)	Reactivity (Yellow)	Special (White)
CEM 365IS	1	0	0	--

Section 4: First Aid Measures

INHALATION: No problems are expected.
 SKIN CONTACT: Immediately remove contaminated clothing and footwear from affected areas. Rinse affected areas with water for 15 minutes. Wash affected areas with soap and water. Get medical attention.
 EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. If victim is wearing contact lenses, remove the lenses and rinse. Get medical attention immediately.
 INGESTION: If swallowed, do not induce vomiting, Give large quantities of milk or water to drink. **Never give anything by mouth to an unconscious person.** Get medical attention immediately.
 INHALATION: No problems are expected.

Section 5: Fire-fighting Measures

FLASH POINT: None
 FLAMMABLE LIMITS IN AIR (% by vol): Not applicable
 EXTINGUISHING MEDIA: Foam, Dry Chemical Powder, or Carbon Dioxide
 SPECIAL FIREFIGHTING PROCEDURES: Wear respiratory protection if in a confined area.
 UNUSUAL FIRE AND EXPLOSION HAZARDS: None

Section 6: Accidental Release Measures

ACTION TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

Dike or otherwise contain spills and absorb with inert materials such as earth or dry sand. Place in a chemical waste container. Flush residual spill area with water. Clean up as much as possible and place in a suitable container for later disposal. Prevent spills or contaminated rinse water from entering sewers or watercourses.

DISPOSAL METHOD:

Dispose in accordance with Federal, State and local regulations. Incineration is recommended disposal method.

Section 7: Handling and Storage

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

- Store closed and upright in a cool, dry place.
- Wear proper protective equipment and avoid contact with skin, eyes or clothing.
- Wash hands after handling this material. Keep out of reach of children.
- Follow all regulations in your country pertaining to this material.

SPECIFIC USES:

- This product is intended for use in Semiconductor photolithography processes.

INFORMATION ON EMPTIED CONTAINER

- Do not reuse this container.
- Dispose of this container according to local, state, and federal laws in your country.

Section 8: Exposure Controls/Personal Protection

EXPOSURE GUIDELINES

VENTILATION:	No special precautions required.
SPECIAL VENTILATION CONTROLS:	None required
RESPIRATORY PROTECTION:	None required.
PROTECTIVE GLOVES:	Rubber Gloves
EYE PROTECTION:	Safety Glasses, Chemical Goggles, Face shield
PROTECTIVE CLOTHING:	Suitable protective clothing to prevent skin contact.
OTHER EQUIPMENT:	Make safety shower, eyewash stations and hand washing equipment available in the work area.
WORK/HYGIENE PRACTICES:	Avoid breathing vapor. Avoid contact with eyes. Wash hands and face after handling.

Section 9: Physical and Chemical Properties

BOILING POINT:	100°C [Water]
SPECIFIC GRAVITY (@25 °C):	1.0 [Water]
MELTING POINT:	Not applicable
EVAPORATION RATE:	>1
SOLUBILITY IN WATER:	Soluble
APPEARANCE - COLOR:	Transparent, Colorless
PHYSICAL STATE:	Liquid
ODOR:	None

Section 10: Stability and Reactivity

STABILITY:	Stable.
CONDITIONS TO AVOID:	None known
INCOMPATIBILITY (MATERIALS TO AVOID):	Oxidizing agents
HAZARDOUS DECOMPOSITION PRODUCTS:	CO, CO ₂ and oxides of nitrogen
HAZARDOUS POLYMERIZATION:	Will not occur

Section 11: Toxicological Information

No information is available for the mixture.

SKIN IRRITATION:

SKIN RABBIT: [Trade Secret 1 -- <6% of product mixture] Irritant
[Trade Secret 2 -- <3% of product mixture] Mild reaction
[Trade Secret 4 -- <2% of product mixture] Corrosive

EYE IRRITATION:

EYE-RABBIT: [Trade Secret 2 -- <3% of product mixture] Moderate reaction
[Trade Secret 4 -- <2% of product mixture] Corrosive

ACUTE TOXICITY (LD50):

LD50 (Oral Rat):	[Luviskol]	> 630 mg. / kg.
LD50 (Oral Rat):	[Trade Secret 1 -- <6% of product mixture]	6400 mg/kg
LD50 (Oral Rat):	[Trade Secret 2 -- <3% of product mixture,	1,700 mg. / kg.
LD50 (Oral Rat):	[Trade Secret 3 -- <2% of product mixture]	6,300 mg/kg
LD50 (Oral Rat):	[Trade Secret 4 -- <2% of product mixture]	
Male		>5000 mg/kg
Female		3310 mg/kg
LD50 (Oral Rabbit):	[Trade Secret 2 -- <3% of product mixture,	1,100 mg/ kg.
LD50 (Skin Rabbit):	[Trade Secret 3 -- <2% of product mixture]	>2000 mg/kg
LD50 (Oral Rabbit):	[Trade Secret 4 -- <2% of product mixture]	>5000 mg/kg

ACUTE TOXICITY (LC50): No information is available

CHRONIC TOXICITY:

NTP: Not listed
IARC: Not listed
OSHA Regulated: Reference Section 2.

AMES TEST RESULTS: No information is available

OTHER INFORMATION: None

Only Selected Registry of Toxic Effects of Chemical Substances (RTECS) data is presented here. See actual entry in RTECS for complete information.

1999/45/EC Annex II No Toxicological hazards

Section 12: Ecological Information

BIODEGRADATION: No information is available.
BIOACCUMULATION: No information is available.
AQUATIC TOXICITY: No information is available.
OTHER INFORMATION: None

1999/45/EC Annex III No Environmental hazards

Section 13: Disposal Considerations

Waste material can be burned in a chemical incinerator equipped with an afterburner and scrubber. Do not dispose of the emptied container unless the contents have been completely removed and the container has been flushed with a clean, neutral solvent and then dried. Do not dispose of the emptied container unlawfully.

Section 14: Transport Information

LABEL FOR CONVEYANCE (EU):

None – Product is 80 -90% water.

ROAD TRANSPORT (49CFR 172):

DOT	Not Regulated
UN NUMBER:	NA
DOT / ADR HAZARD CLASS:	NA
DOT / ADR LABELS:	NA
PLACARD:	NA
DOT / ADR PACKAGING GROUP:	NA
HAZARD NUMBER – ADR:	NA
DOT / ADR PROPER SHIPPING NAME:	NA
EPA HAZARDOUS WASTE CLASS:	NA
MARINE POLLUTANT:	NA
DOT REPORTABLE QUANTITY:	NA

RAIL TRANSPORT:

RID CLASS No.:	NA
RID PACKING GROUP:	NA

OCEAN TRANSPORT:

UN NUMBER SEA:	NA
IMDG CLASS:	NA
IMDG PACKING GROUP:	NA
EmS No.:	NA
MARINE POLLUTANT:	NA
SEA TRANSPORT NOTES:	NA

AIR TRANSPORT:

IATA/ICAO CLASS:	NA
AIR PACKING GROUP:	NA

Section 15: Regulatory Information

TOXIC SUBSTANCES CONTROL ACT (TSCA) STATUS:

The ingredients in this product are compliant with TSCA regulations and TSCA's Low Volume Exemption (LVE) requirements.

FEDERAL INSECTICIDE, FUNGICIDE AND RODENTICIDE ACT (FIFRA) -- Trade Secret 4 is regulated under FIFRA and is therefore exempt from TSCA inventory requirements.

**SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (SARA) TITLE III SECTION 313
SUPPLIER NOTIFICATION:**

This regulation requires submission of annual reports of toxic chemical(s) that appear in section 313 of the Emergency Planning and Community Right To Know Act of 1986 and 40 CFR 372. This information must be included in all MSDS's that are copied and distributed for the material.

The toxic chemicals contained in this product are: None

CALIFORNIA PROPOSITION 65:

This regulation requires a warning for California Proposition 65 chemical(s) under the statute.

The California proposition 65 chemical(s) contained in this product are: None

STATE TOXIC SUBSTANCE OR HAZARDOUS SUBSTANCE LIST (State Right-to-Know):

Florida Toxic Substance(s): None

Massachusetts hazardous substance code(s): None

Pennsylvania hazardous substance code(s): None

CLEAN AIR ACT AMMENDMENTS (1990):

SECTION 112, HAZARDOUS AIR POLLUTANTS: None

SECTION 111, VOLATILE ORGANIC COMPOUNDS Yes, <1%

CLEAN WATER ACT: None of the chemicals used in the product are listed as a Priority Pollutant in Appendix A to 40 CFR, Part 423—126 Priority Pollutants.

CANADA:

WHMIS INFORMATION: The Canadian Workplace Hazardous Materials Information System (WHMIS) Classification for this product is:

Luviskol Canada Gazette, Part I, January 26, 1991
TS2 Canada Gazette, Part I, January 26, 1991
TS3 Canada Gazette, Part I, January 26, 1991
TS4 Canada Gazette, Part I, January 26, 1991

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

DSL listed:

Luviskol: Yes TS2 –Yes TS3--Yes TS4 -- Yes

This product has been reviewed for compliance with the following European Community Directives: Directive 67/548/EEC, Directive 2001/59/EC, Directive 1999/45/EC, Directive 91/155/EC, and Directive 2001/58/EC.

COMPONENT	EINEC/ELINC NUMBER	EINEC/ELINC STATUS	CMR CLASSIFICATION	DANGER SYMBOL	RISK PHRASE NUMBER	SAFETY PHRASE NUMBER	WGK
Mixture	N/A	Not listed	Not Classified	N/A	Not Hazardous	Safe	0

EINECS: European Inventory of Existing Commercial Chemical Products.
ELINCS: European List of Notified Chemical Substances

Section 16: Other Information

FOR INDUSTRIAL USE ONLY:

This material safety data sheet is offered solely for your information, consideration and investigation. The data described in this MSDS consist of data on literature, our acquisitional data, and analogical inference by data of similar chemical substances or products. Shin-Etsu Chemical Co. Ltd. provides no warranties, either expressed or implied, and assumes no responsibility for the accuracy or completeness of the data contained herein. Final determination of the suitability of any material is the sole responsibility of the user.

ADDITIONAL INFORMATION:

The information contained within this MSDS is released in good faith and believed to be accurate. No agent of Shin-Etsu Chemical Co., Ltd's, and its subsidiaries, are authorized vary any MSDS data, and its agents disclaim all liability for any action taken or foregone on reliance upon such data. Conditions of use are beyond Shin-Etsu Chemical Co., Ltd's, and its subsidiaries control and therefor the users are responsible to verify this data under their own particular purposes and they alone assume all risks of their use, handling, disposal and reliance upon the information provided herein.

Full Text:

European Community Hazards Identification:

Danger Symbol(s):	NA
Revision Comments:	UPDATED FOR TRADE SECRET 3
Revision Number:	6
Information Sources:	RTECS
Revision Date:	July 1, 2004