

SAFETY DATA SHEET

This SDS complies with REACH 1907/2006 and 2001/58/EC, GHS, OSHA 29CFR 1910.1200

Section 1: Chemical Product and Company Identification

CHEMICAL SUPPLIER COMPANY NAME

Shin-Etsu MicroSi, Inc.
10028 South 51st Street
Phoenix, AZ 85044
Safety Data Sheet Competent Person:

EMERGENCY TELEPHONE

Chemtrec 24 hrs: (800) 424-9300
Information: (480) 893-8898
Fax: (480) 893-8637
Customer Service csteam@microsi.com

MANUFACTURER'S NAME:

Shin-Etsu Chemical Co., Ltd.
6-1, 2-Chome, Ohtemachi, Chiyodaku, Tokyo, 100-0004, Japan
81-3-3246-5346 Tokyo, Japan
81-25-545-5811 Niigata, Japan
31-20-662-1359 Shin Etsu International Europe B.V., Amsterdam, The Netherlands

ADDRESS:

TELEPHONE NUMBER:

DATE PREPARED:

August 12, 2008

DATE REVIEWED: September 3, 2015

PRODUCT NAMES:

MPHP (MICROPRIME HP PRIMER)

PRODUCT USE:

This product is limited to use in Semiconductor photolithography processes.

Section 2: Hazards Identification

GHS Hazard Class

Flammable Liquid -- Category 2
Acute Toxicity Oral -- Category 4
Acute Toxicity Dermal -- Category 4
Acute Toxicity Inhalation -- Category 4
Skin corrosion/irritation -- Category 1
Eye damage/irritation -- Category 1
Hazardous to the Aquatic Environment -- Long Term (Chronic) Hazard -- Category 3



Signal word:

Danger

Hazard Statement:

H225 Highly Flammable liquid and vapor
H302 Harmful if swallowed
H312 Harmful in contact with skin
H314 Causes severe skin burns and eye damage
H318 Causes serious eye damage
H332 Harmful if inhaled
H412 Harmful to aquatic life with long lasting effects

Precautionary Statements:

Prevention

P210 Keep away from heat/sparks/open flames/hot surfaces. – NO smoking.
P233 Keep container tightly closed.
P240 Ground/bond container and receiving equipment.
P241 Use explosion proof electrical/ventilating/lighting equipment.
P242 Use only non sparking tools.
P243 Take precautionary measures against static discharge.
P260 Do not breathe dust/fume/gas/mist/vapors/spray.
P262 Do not get in eyes, on skin, or on clothing.
P264 Wash hands thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P273 Avoid release to the environment.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Response

P301+P312 IF SWALLOWED: Call a POISON Center or doctor if you feel unwell.
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P302+P352 IF ON SKIN: wash with plenty of soap and water.
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312 Call a POISON Center or doctor if you feel unwell.

Storage	P363 P370+P378 P403+P233 P403+P235	Wash contaminated clothing before reuse. In case of fire, use Foam, dry chemical, or carbon dioxide. Do NOT use Water. Store in a well ventilated place. Keep container tightly closed. Store in a well ventilated place. Keep cool.
Disposal	P405 P501	Store locked up. Waste from Residues and Unused Products: Recommend waste material is disposed of by using incineration. Follow the waste disposal requirements of your country, state, or local authorities.

Hazards not otherwise classified (HNOC) or not covered by GHS - HMDS reacts with water to emit ammonia gas.

HAZARD CLASSIFICATION: Flammable Liquid (based on IATA, IMDG and DOT)
FIRE AND EXPLOSION: Liberates Explosive vapors with air.

NFPA RATINGS:

Component	Health (Blue)	Flammability (Red)	Reactivity (Yellow)	Special (White)
MPHP	2	4	1	--

Section 3: Composition / Information on Ingredients

PRODUCT COMPOSITION	APPROX %	CAS NO.	EINECS/ELINCS	DSL
1,1,1,3,3,3-Hexamethyldisilazane (HMDS)	100	999-97-3	213-668-5	Y

Some items on this MSDS may be designated as trade secrets (TS). Bona fide 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.

Section 4: First Aid Measures

Description of First Aid Measures

Inhalation:	Remove to fresh air. If not breathing, provide CPR (cardio pulmonary resuscitation) get immediate medical attention.
Skin Contact:	Immediately flush skin with plenty of soap and water for at least 15 minutes. Remove contaminated clothing.
Eye Contact:	Immediately flush eyes with plenty of water for at least 15 minutes. Get immediate medical attention.
Ingestion:	If swallowed do not induce vomiting, give large quantities of water to drink. Never give anything to an unconscious person. Get immediate medical attention.

Most important symptoms and effects, both acute and delayed

Ingestion:	May cause Headache, Nausea, Vomiting, and Abdominal pains.
Inhalation:	May cause dizziness and headaches.
Skin Contact:	Causes severe damage.
Eye Contact:	Causes severe damage.

Indication of any immediate medical attention and special treatment needed

Symptoms may not appear immediately. In case of accident or if you feel unwell, seek medical advice immediately.

Section 5: Fire-fighting Measures

Suitable extinguishing media

Use foam, dry chemical powder, carbon dioxide or dry sand.

Special hazards arising from the substance or mixture

Possible generation of carbon monoxide, oxides of nitrogen, and other toxic fumes.

Protective actions fire-fighters

Wear standard protective equipment and self contained breathing apparatus for firefighting if necessary.

Further information

Use water spray to cool unopened containers.

Section 6: Accidental Release Measures

Personal precautions, protective equipment and emergency procedures

Wear proper personal protective equipment. Avoid breathing vapors, mist or gas. Eliminate all sources of ignition and ensure adequate ventilation of area. Solvent vapors may create explosive mixtures with air. Vapors can travel a considerable distance to source of ignition and flash back. Vapors can accumulate in low areas.

For personal protection see section 8.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Prevent spills or contaminated rinse water from entering sewers or watercourses.

Methods and materials for containment and cleaning up

In case of small spills, absorb with inert materials such as earth or dry sand. Place in a chemical waste container. In case of large spills, dike the spill, if possible. Call emergency services. Absorb the chemical. Place in a chemical waste container.

For disposal see section 13.

Section 7: Handling and Storage

Precautions for safe handling

Take precautionary measures against static discharge.

Keep away from heat, sparks, flame, direct sunlight and other possible sources of ignition.

Use only with adequate ventilation.

Do not inhale vapors.

Avoid spilling and releasing vapor.

Wear proper protective equipment when handling this material.

Avoid contact with skin, eyes or clothing.

Wash hands and face after handling this material.

Appropriate container should be used for disposal.

For precautions see section 2.

Conditions for safe storage, including any incompatibilities

Store upright in a cool, dry place.

Keep container closed when not in use.

Prevent build-up of electro-static charges (e.g. by grounding).

Keep away from heat, sparks, flame, direct sunlight and other possible sources of ignition.

Do not store with acid, metallic oxide, amines and combustible materials.

Utilize chemical segregation.

Follow all applicable local regulations for handling and storage.

Specific uses

This product is intended for use in Semiconductor photolithography processes.

Section 8: Exposure Controls/Personal Protection

Control Parameters

Contains no substances with occupational exposure limit values.

Exposure Controls

Ventilation:

Always provide good general, mechanical room ventilation where this chemical is used.

Special Ventilation Controls:

Use this material inside totally enclosed equipment, or use it with local exhaust ventilation at points where vapors can be released into the workspace air.

Respiratory Protection:

Use NIOSH approved air-purifying respirator equipped with organic vapor cartridge if required by your process.

Protective Gloves:

Wear chemical impervious gloves at all times while working with this product. Recommended glove types include: Laminate Film, Nitrile, or

Eye Protection:	Tri-polymer. Check with your company's glove supplier to ensure chemical resistance.
Protective Clothing:	Safety Glasses, Chemical goggles, face shield
Other Equipment:	Wear suitable protective clothing to prevent skin contact. Use of anti-static type aprons is recommended.
Work/Hygiene Practices:	Make safety shower, eyewash stations, and hand washing equipment available in the work area. Avoid breathing vapor. Avoid contact with eyes. Wash hands and face after handling.

Section 9: Physical and Chemical Properties

	PRODUCT CRITERIA
APPEARANCE - COLOR:	Clear colorless
PHYSICAL STATE:	Liquid
ODOR:	Ammonia odor
ODOR THRESHOLD	No data available
PH	No data available
MELTING POINT/FREEZING POINT:	No data available
INITIAL BOILING POINT AND BOILING RANGE:	126°C, 258.8°F
FLASH POINT:	10°C, 50°F
EVAPORATION RATE: (Butyl Acetate=1)	>1
FLAMMABILITY (Solid, gas)	No data available
UPPER/LOWER FLAMMABILITY OR EXPLOSIVE LIMITS	Lower: 0.49% v/v, Upper: 22.5% v/v
VAPOR PRESSURE (25 °C)	< 1.3 kPa
VAPOR DENSITY (AIR = 1)	4.6
RELATIVE DENSITY (25 °C):	0.77
SOLUBILITY(IES)	Insoluble in water (Hydrolyzed with water)
OXIDIZING PROPERTIES	No data available
PARTITION COEFFICIENT: n-octanol/water	Log Pow: 2.62
AUTO IGNITION TEMPERATURE	380°C, 716°F
DECOMPOSITION TEMPERATURE	No data available
VISCOSITY	No data available
% VOLATILE by VOLUME	100

Section 10: Stability and Reactivity

Reactivity:	Reacts with water, strong acids, metallic oxides, amines and combustible materials.
Chemical Stability:	Stable under recommended conditions. Hydrolyses readily.
Possibility of Hazardous Reactions:	Will not occur under normal temperatures and pressures.
Conditions to Avoid:	Heat, direct sunlight, contact with water, acids, metallic oxides, amines, combustible materials, sparks, and other sources of ignition. HMDS reacts with water to emit ammonia gas.
Incompatibility (Materials to Avoid):	Water, Acids, metallic oxides, amines, combustible materials.
Hazardous Decomposition Products:	Decomposition products include carbon monoxide, carbon dioxide, and fumes of aromatic and aliphatic hydrocarbons.

Section 11: Toxicological Information

GHS Required Criteria	Toxicity Criteria	Toxicity Information	Comments	Chemical Constituent
Acute Toxicity	LD50 (Oral/Rat):	850 mg/kg		HMDS
	LC50 (Inhalation/Rat):	10 mg/l 6 hour		HMDS
	LC50 (Inhalation/Rat):	1516 ppm 6 hour		HMDS
	LC50 (Inhalation/Mouse):	12 g/m ³ 2Hours		HMDS
	LD50 (Oral/Rabbit):	100 mg/kg		HMDS
	LD50 (Skin/Rabbit):	0.710 ml/kg = 549.5 mg/kg		HMDS
	LD50 (Skin/Rabbit):	>1000 mg/kg	MicroSi Independent Test October 2012*	HMDS
	TCLo (Inhalation/Rat)	98 mg/m ³ / 4Hour 17 W-I		HMDS
Skin Corrosion/Irritation	Skin Rabbit:	500 µL	Severe	HMDS
Serious Eye Damage / Eye		No data available		

Irritation				
Respiratory or Skin Sensitization		No data available		
Germ Cell Mutagenicity		No data available		
Carcinogenicity	IARC	No data available		
	NTP	No data available		
	OSHA	No data available		
Reproductive Toxicity		No data available		
STOT -- Single Exposure		No data available		
STOT -- Repeated Exposure		No data available		
Aspiration Hazard		No data available		
Tumorigenic	TDLo (Intraperitoneal/Mouse)	1 g/kg	Tumorigenic agent per RTECS	HMDS

*October 1212, Shin-Etsu MicroSi contracted with Korea Testing and Research Institute to perform a Dermal Rabbit test that followed: OECD Guideline for testing of chemicals, TG 402, Acute Dermal Toxicity (Adopted February 24, 1987; and OECD Principle of Good Laboratory Practices (GLP), ENV/MC/CHEM (98)17 as revised in 1997.

Section 12: Ecological Information

Toxicity:	LC50 – Danio rerio (zebra fish) – 88 mg/l – 96.0 hour	HMDS
	EC50 – Daphnia magna (Water flea) – 80.0 mg/l – 48 hour	HMDS
	EC50 – Desmodesmus subspicatus (green algae) – 19.0 mg/l – 72 hour	HMDS
Persistence and degradability:	15.3% - Not readily biodegradable OECD Test 301	HMDS
Bioaccumulative potential	No data available	
Mobility in soil:	No data available	
PBT and vPvB assessment:	PBT/vPvB assessment not available as chemical assessment not required/not conducted	
Other adverse effects:	No data available	

Section 13: Disposal Considerations

Waste from residues/unused products: Recommend waste material be disposed of by using incineration. Follow the waste disposal requirements of your country, state, or local authorities.

Contaminated packaging: Contaminated packaging material should be disposed of by incineration as stated above for residues and unused product.

Rinsate: Do not dispose of rinse water containing product in a sanitary sewer system, stormwater drainage system, or wastewater treatment system. Rinsate should be disposed of by incineration as stated above for residues and unused product.

Section 14: Transport Information

ROAD TRANSPORT:

ADR = International Carriage of Dangerous Goods by Road

UN NUMBER:	UN 2924
DOT PROPER SHIPPING NAME:	Flammable Liquid, Corrosive, N.O.S., (Contains Hexamethyldisilazane)
DOT / ADR HAZARD CLASS:	3, (8)
DOT / ADR PACKAGING GROUP:	II
PLACARD:	Flammable 3, Corrosive 8
HAZARD NUMBER – ADR:	UN 2924
ADR PROPER SHIPPING NAME:	Flammable Liquid, Corrosive, N.O.S., (Contains Hexamethyldisilazane)

RAIL TRANSPORT: RID

UN NUMBER:	UN 2924
CLASS No.:	Flammable Liquid, Corrosive, N.O.S., (Contains Hexamethyldisilazane)
RID PACKING GROUP:	II
LABELS:	3, (8)

SEA TRANSPORT: IMDG

UN NUMBER SEA:	UN 2924
PROPER SHIPPING NAME:	Flammable Liquid, Corrosive, N.O.S., (Contains Hexamethyldisilazane)
CLASS:	3, (8)
PACKING GROUP:	II
EmS No.:	F-E, S-C
MARINE POLLUTANT:	No

AIR TRANSPORT: IATA/ICAO

UN NUMBER:	UN 2924
PROPER SHIPPING NAME	Flammable Liquid, Corrosive, N.O.S., (Contains Hexamethyldisilazane)
HAZARD CLASS:	3, (8)
PACKAGING GROUP:	II

Section 15: Regulatory Information

TOXIC SUBSTANCES CONTROL ACT (TSCA) STATUS:

This product is in compliance with rules, regulations, and orders of TSCA. All components are listed on the TSCA Inventory.

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.

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 RIGHT-TO-KNOW TOXIC SUBSTANCE OR HAZARDOUS SUBSTANCE LIST:

Florida Toxic Substance(s):	None
Massachusetts's hazardous substance(s):	None
Pennsylvania hazardous substance code(s):	HMDS
New Jersey	HMDS
Illinois	None
Michigan:	None

CANADA:

WHMIS-2015: This SDS is in compliance with WHMIS 2015 (HPR / new HPA).

EUROPEAN UNION:

This product has been reviewed for compliance with the following European Community Directives: REACH 1907/2006; Regulation (EC) No 1272/2008 on classification, labeling, and packaging (CLP) of substances and mixtures.

WGK: 1

WEEE CERTIFICATION: Waste Electrical and Electronic Equipment (WEEE), European Union Directive 2002/96/EC. Shin Etsu MicroSi does not consider MPHP a product that qualifies as one of the 10 categories of electrical and electronic equipment listed in Annex 1A of Directive 2002/96/EC. Also, the products manufactured by Shin Etsu MicroSi do not intentionally contain any of the regulated substances, preparations, or components listed in Annex II of Directive 2002/96/EC. This certification is valid only for this product: MPHP. Packaging materials were not considered for this certification.

RoHS CERTIFICATION: The Restriction of Hazardous Substances in Electrical and Electronic Equipment (RoHS), EU Directive (2002/95/EC-rescinded) and 2011/65/EU. We hereby certify that the hazardous substances regulated by the RoHS Directive 2011/65/EU are not used intentionally as ingredient(s) for MPHP which is manufactured by Shin-Etsu Chemical Co. Ltd. This certification is valid only for this product, MPHP. Packaging materials were not considered for this certification.

Section 16: Other Information

STOT = Specific Target Organ Toxicity.

Creation date:

Initial issue date: August 12, 2008

Final revision date: September 3, 2015

Revision Number: 9

Information Sources: RTECS, ECHA, REACH, OSHA 29CFR 1910.1200

FOR INDUSTRIAL USE ONLY

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