



MATERIAL SAFETY DATA SHEET

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

Section 1: Chemical Product and Company Identification

CHEMICAL SUPPLIER COMPANY NAME	EMERGENCY TELEPHONE
Shin-Etsu MicroSi, Inc.	Chemtrec 24 hrs: (800) 424-9300
10028 South 51 st Street	Information: (480) 893-8898
Phoenix, AZ 85044	Fax: (480) 893-8637

MANUFACTURER'S NAME: Shin-Etsu Chemical Co. Ltd.
 ADDRESS: 6-1, 2-Chyome, Ohtemachi, Chiyodaku, Tokyo 100-0004, JAPAN
 TELEPHONE NUMBER: 81-3-3246-5345 Tokyo, Japan

DATE PREPARED: 08/17/1998 DATE REVIEWED: 01/03/2000
 PRODUCT NAMES: **Microprime HP Primer**
 CHEMICAL NAME: Hexamethyldisilazane
 CHEMICAL FAMILY: Primer
 FORMULA: C₆H₁₉NSi₂

Section 2: Composition, Information on Ingredients

PRODUCT COMPOSITION	wt. %	ACGIH TLV	OSHA PEL	UNITS	CAS NO.
Hexamethyldisilazane (HMDS)	100	Not Established	Not Established	NA	999-97-3

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.

Section 3: Hazards Identification

HAZARD CLASSIFICATION: Flammable Liquid (IMO and DOT)
 SUBSIDIARY HAZARD CLASSIFICATION: Corrosive
 FIRE AND EXPLOSION: Flammable and Explosive Hazard
 NFPA RATINGS:

Component	Health(Blue)	Flammability(Red)	Reactivity(Yellow)	Special(White)
Hexamethyldisilazane (HMDS)	1	3	1	--

POTENTIAL HEALTH EFFECTS

INHALATION: May cause nausea, headache and vomiting.
 SKIN CONTACT: May cause severe irritation and chemical burns.
 EYE CONTACT: Severe irritation and possible chemical burns.
 INGESTION: Possible nausea, headache, vomiting, abdominal pain.

Section 4: First Aid Measures

INHALATION:

Move into fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen at once. Get medical attention immediately.

SKIN CONTACT:

Rinse affected areas with plenty of water for a minimum of 15 minutes. Immediately remove contaminated clothing and footwear from affected areas. Contact a physician.

EYE CONTACT:

Rinse affected areas with plenty of water for a minimum of 15 minutes. If victim is wearing contact lenses, remove the lenses and rinse. Get medical attention immediately.

INGESTION:

If swallowed, contact a physician at once. Note to physician: there is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition. **Never give anything by mouth to an unconscious person.**

Section 5: Fire-fighting Measures

FLASH POINT:

8.9°C, 48°F (by PMCC)

FLAMMABLE LIMITS IN AIR (% by vol):

Lower: 0.8%, Upper: Not Established

EXTINGUISHING MEDIA:

Alcohol Foam, Dry Chemical, or CO₂

SPECIAL FIREFIGHTING PROCEDURES:

Use normal firefighting procedures for fighting flammable liquid fires. Wear supplied breathing air and other protective equipment. Work from the upwind side of the fire. Use suitable extinguishing agents. If possible, move the container to a safe area. If it cannot be removed from fire danger, protect it from destruction then cool container and vicinity by spraying with water. If ignited and it cannot be extinguished easily, evacuate the area and call your emergency responders. Oxides of Nitrogen and Silicon may be formed from fire. Ammonia will be generated from reaction with water.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Solvent vapors may create explosive mixtures with air. Vapors can travel a considerable distance to source of ignition and flash back. Prevent build-up of explosive atmospheres by using adequate ventilation. Disperse explosive vapor mixtures by ventilating with air. Pressure may build up in closed containers. This is accelerated by heat with possible release of flammable vapors.

Section 6: Accidental Release Measures

ACTION TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

Wear proper protective equipment and warn unnecessary people away. Eliminate all sources of ignition and ventilate area. 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 of in accordance with Federal, State and local regulations. Incineration is recommended.

Section 7: Handling and Storage

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

- Store upright in a cool, dry place, in appropriate flammable liquid storage areas or cabinets.
- 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.
- Keep away from moisture, oxidants, and metals.
- 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.
- Keep out of reach of children.
- Follow all regulations in pertaining to this material in your country.

INFORMATION ON EMPTIED CONTAINER

- Do not reuse this container
- This container may be hazardous when emptied. Residues may be explosive or flammable.
- Keep empty container away from heat, sparks, flame, direct sunlight and other possible sources of ignition.
- Do not puncture or cut this container, and do not weld on or near this container.
- Dispose of this container according to local, state, and federal laws in your country.

Section 8: Exposure Controls/Personal Protection

EXPOSURE GUIDELINES

ACGIH TLV-TWA:	Not Established
ACGIH STEL:	Not Established
OSHA PEL:	Not Established
AIHA WEEL – TWA:	Not Established

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 only NIOSH approved, air-purifying respirator equipped with appropriate vapor cartridge if required by your process.

PROTECTIVE GLOVES: Chemical Resistant Gloves

EYE PROTECTION: Safety Glasses, Chemical Goggles, Faceshield

PROTECTIVE CLOTHING:

- Wear suitable protective clothing to prevent skin contact. Use of anti-static type aprons is recommended.

OTHER EQUIPMENT:

- Make safety shower, eyewash stations and handwashing 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:	126 °C
VAPOR PRESSURE(@20 °C):	20mmHg
VAPOR DENSITY:	Heavier Than Air
SPECIFIC GRAVITY(@25 °C):	0.773
MELTING POINT:	Not Applicable
EVAPORATION RATE (Butyl Acetate = 1):	Slower Than Ether
SOLUBILITY IN WATER:	Not Soluble, Reacts With Water to Emit Ammonia
PERCENT VOLATILE (wt%):	100
APPEARANCE - COLOR:	Clear, Colorless Liquid
PHYSICAL STATE:	Liquid
ODOR:	Slight Amine Odor

Section 10: Stability and Reactivity

STABILITY: Stable.

CONDITIONS TO AVOID:

Heat, direct sunshine, static electricity, or sources of ignition.

INCOMPATIBILITY (MATERIALS TO AVOID):

Water, mineral acids, oxidizing agents, aluminum and zinc metal. This chemical reacts with water to emit ammonia gas.

HAZARDOUS DECOMPOSITION PRODUCTS:

Details unknown. May emit toxic fumes when burned.

HAZARDOUS POLYMERIZATION: Will not occur.

Section 11: Toxicological Information

SKIN IRRITATION:	Primary irritant
EYE IRRITATION (Rabbit):	Severe in standard Draize test.
ACUTE TOXICITY (LD50):	
LD50 (Oral/Rat):	850 mg/kg
LC50 (Inhalation/Rat):	8700 mg/m ³ /4H
LC50 (Inhalation/Mouse):	12 g/m ³ /2H
LD50 (Oral/Rabbit):	1100 mg/kg
LD50 (Skin Contact/Rabbit):	710 uL/kg
CHRONIC OR MULTIPLE DOSE TOXICITY:	
TCLo (Inhalation/Rat):	98 mg/m ³ /4H/17W-I
TUMORIGENIC DATA:	
TCLo (Intraperitoneal/Mouse):	1 g/kg/I
	Equiv. tumorigenic agent by RTECS criteria.
CARCINOGENICITY:	
NTP:	Not listed
IARC:	Not listed
OSHA:	Not listed
TERATOGENIC AFFECTS:	No information is available.
MUTAGENIC AFFECTS:	No information is available.
OTHER INFORMATION:	None

Section 12: Ecological Information

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

Section 13: Disposal Considerations

Can be burned in a chemical incinerator equipped with an afterburner and scrubber, but exert extra care in igniting as this product is very flammable. 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. Observe all federal, state, and local laws in your country.

Section 14: Transport Information (per 49 CFR 172.101)

UN NO.:	2924
IMO CLASSIFICATION AND CLASS, and DOT HAZARD CLASS:	Flammable Liquids / Class 3.2
DOT LABELS:	Flammable Liquid, Corrosive
PLACARD:	Flammable Liquid, Corrosive
PACKAGING GROUP:	II
DOT PROPER SHIPPING NAME, and EXPORT SHIPPING NAME:	Flammable Liquids
TECHNICAL SHIPPING NAME:	Flammable Liquids, Corrosive n.o.s.
EPA HAZARDOUS WASTE CLASS:	D0001 Ignitable, D0002 Corrosive, D0003 Water Reactive

DOT REPORTABLE QUANTITY (49 CFR 172.101, APP.) and CERCLA REPORTABLE QUANTITY (40 CFR PART 302, TABLE 302.4) HAZARDOUS SUBSTANCE NAME, CAS NO., CONTENT(S) AND REPORTABLE QUANTITY (RQ):

This chemical is not listed as a hazardous substance with RQ on any list published by DOT, CERCLA or RCRA. However, the mixture is defined as a flammable and corrosive liquid and is regulated as a RCRA hazardous waste at the moment the mixture becomes a waste. It is defined as waste at the moment it is spilled because it is not salvageable. Therefore, according to the RCRA definition of waste, the CERCLA definition of release, per FR Apr. 4 1985, and FR Sep. 29, 1986, the reportable quantity this mixture is 100 lbs. due to the RCRA hazardous characteristics of this chemical. The release of 100 lb.s or more of this mixture is a CERCLA reportable quantity at the moment of release.

Section 15: Regulatory Information

TOXIC SUBSTANCES CONTROL ACT (TSCA) STATUS:

This chemical is 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 chemical(s) that are subject to 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 SARA 313 reportable chemicals contained in this product are: Hexamethyldisilazane.

The SARA 312 reportable chemicals contained in this product are: Hexamethyldisilazane.

The SARA 311 reportable chemicals contained in this product are: Hexamethyldisilazane.

CLEAN AIR ACT RISK MANAGEMENT PLAN RULE, CAA 112(r) STATUS: Not listed.

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): Not listed.

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 MicroSi, Inc., 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. This information applies only to the product designated above and does not necessarily apply to its use in combination with other materials, products, chemical compounds, structures or processes.