

PI 5878G

Version 2.0

Revision Date 10/24/2011

Ref. 130000024812

This SDS adheres to the standards and regulatory requirements of the United States and may not meet the regulatory requirements in other countries.

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : PI 5878G
MSDS Number : 130000024812

Product Use : Polyimide coating for semi-conductor industry

Manufacturer : HD MicroSystems™
250 Cheesequake Road
Parlin, New Jersey 08859

Product Information : 800-346-5656
Transport Emergency : CHEMTREC: 1-800-424-9300 (outside the U.S. 1-703-527-3887)

SECTION 2. HAZARDS IDENTIFICATION

Potential Health Effects

Skin : May cause skin irritation. May be harmful in contact with skin (after often repeated exposure).

Eyes : Contact with eyes may cause irritation.

Inhalation : Respiratory irritation Difficulty in breathing

Ingestion : May cause: Kidney effects, Respiratory tract damage, altered blood chemistry.

Repeated exposure : The material may be absorbed through the skin.

Target Organs : Respiratory system, Kidney

Carcinogenicity

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, or OSHA, as a carcinogen.

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SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No.	Concentration
N-Methyl-2-pyrrolidone	872-50-4	50 - 70 %
Solvent naphtha (petroleum), light arom. (<0.1% Benzene)	64742-95-6	15 - 20 %
1,2,4-Trimethylbenzene	95-63-6	5 - 10 %
Polyimide		15 - 20 %

SECTION 4. FIRST AID MEASURES

- Skin contact : Take off all contaminated clothing immediately. Wash off immediately with plenty of water.
- Eye contact : Rinse thoroughly with plenty of water, also under the eyelids. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.
- Inhalation : Move to fresh air.
- Ingestion : Immediately give large quantities of water to drink. Do not induce vomiting: contains petroleum distillates and/or aromatic solvents. Consult a physician.
- General advice : Never give anything by mouth to an unconscious person.

SECTION 5. FIREFIGHTING MEASURES

- Flammable Properties
- Flash point : 61 °C (142 °F)
Method : Setaflash closed cup - SCC

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Autoignition temperature	: 270 °C (518 °F)
Lower explosion limit	: 1.3 vol%
Upper explosion limit	: 9.5 vol%
Fire and Explosion Hazard	: Vapours may form explosive mixtures with air.
Suitable extinguishing media	: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Unsuitable extinguishing media	: High volume water jet
Firefighting Instructions	: In the event of fire, wear self-contained breathing apparatus. Do not allow run-off from fire fighting to enter drains or water courses. Evacuate personnel to safe areas.

SECTION 6. ACCIDENTAL RELEASE MEASURES

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Safeguards (Personnel)	: Ensure adequate ventilation. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Remove all sources of ignition. Wear respiratory protection.
Spill Cleanup	: Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Contain spillage, pick up with an electrically protected vacuum cleaner or by wet-brushing and transfer to a container for disposal according to local regulations (see section 13).
Accidental Release Measures	: Do not flush into surface water or sanitary sewer system. Avoid subsoil penetration. Prevent further leakage or spillage if safe to do so. Dispose of in accordance with local regulations.

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SECTION 7. HANDLING AND STORAGE

- Handling (Personnel) : Avoid contact with skin, eyes and clothing. Smoking, eating and drinking should be prohibited in the application area. Avoid inhalation of vapour or mist. Provide sufficient air exchange and/or exhaust in work rooms. Take precautionary measures against static discharges. Wash contaminated clothing before re-use. Wash hands before breaks and at the end of workday. Keep away from food and drink.
- Handling (Physical Aspects) : Keep away from heat and sources of ignition.
- Storage : Keep away from sources of ignition - No smoking. Keep away from direct sunlight. Keep container closed to prevent contamination. Keep away from: Strong oxidizing agents
- Storage temperature : > -20 - < -10 °C (> -4 - < 14 °F)

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

- Engineering controls : Ensure adequate ventilation.
- Personal protective equipment
 - Respiratory protection : When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Mask with gas filter, type A (EN 141)
 - Hand protection : Material: butyl-rubber
Glove thickness: 0.5 mm
Wearing time: 480 min
Additional protection: Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.
 - Eye protection : Safety glasses with side-shields
- Exposure Guidelines
 - Exposure Limit Values
 - N-Methyl-2-pyrrolidone
AEL * (DUPONT) 5 ppm 8 & 12 hr. TWA, Skin

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Solvent naphtha (petroleum), light arom. (<0.1% Benzene)

AEL *	(DUPONT)	100 ppm	8 & 12 hr. TWA
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Polyimide

AEL *	(DUPONT)	10 mg/m3	8 & 12 hr. TWA Total dust.
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AEL *	(DUPONT)	5 mg/m3	8 & 12 hr. TWA Respirable dust.
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1,2,4-Trimethylbenzene

PEL:	(OSHA)	25 ppm	125 mg/m3	8 hr. TWA
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TLV	(ACGIH)	25 ppm	TWA
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Biological Exposure Indices

N-Methyl-2-pyrrolidone

BEI	(ACGIH)	100 mg/l	5-Hydroxy-N-methyl-2-pyrrolidone/Urine
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Sampling time: End of shift.

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Form	: liquid
Color	: brown
Odor	: amine-like
Boiling point/boiling range	: 202 - 203 °C (396 - 397 °F)
Water solubility	: partly miscible
Viscosity	: 5,000 - 7,000 mPa.s at 25 °C (77 °F)

SECTION 10. STABILITY AND REACTIVITY

Stability	: Stable at normal temperatures and storage conditions.
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Incompatibility : Incompatible with oxidizing agents. Reducing agents, Strong acids

Hazardous decomposition products : Hazardous decomposition products: Carbon monoxide, Carbon dioxide (CO₂), nitrogen oxides (NO_x)

Hazardous reactions : Polymerization will not occur.

SECTION 11. TOXICOLOGICAL INFORMATION

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Further information : Solvents may degrease the skin.No data is available on the product itself.

N-Methyl-2-pyrrolidone

 Dermal LD50 : > 5,000 mg/kg , rat

 Oral LD50 : 4,150 mg/kg , rat

 Inhalation 4 h LC50 : > 5.1 mg/l , rat
 Target Organs: Respiratory Tract
 Respiratory tract irritation

 Skin irritation : Skin irritation, rabbit

 Eye irritation : Eye irritation, rabbit

 Skin sensitization : Patch test on human volunteers did not demonstrate sensitization properties., human

 Repeated dose toxicity : Oral
 rat
 Reduced body weight gain

 Carcinogenicity : Overall weight of evidence indicates that the substance is not carcinogenic.

 Mutagenicity : Did not show mutagenic effects in animal experiments.
 Tests on bacterial or mammalian cell cultures did not show mutagenic effects.

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- Reproductive toxicity : Animal testing showed effects on reproduction at levels equal to or above those causing parental toxicity.
- Teratogenicity : Animal testing showed effects on embryo-fetal development at levels equal to or above those causing maternal toxicity.
Reduced embryo-foetal viability
Foetal malformations

1,2,4-Trimethylbenzene

- Dermal LD50 : > 3,160 mg/kg , rabbit
- Oral LD50 : 3,280 mg/kg , rat
- Inhalation 4 h LC50 : 18 mg/l , rat
Central nervous system depression
Respiratory tract irritation
- Skin irritation : rabbit
irritant
- Eye irritation : animals (unspecified species)
irritant
- Skin sensitization : guinea pig
Did not cause sensitization on laboratory animals.
- Repeated dose toxicity : Inhalation
animals (unspecified species)

Central nervous system depression
- Mutagenicity : Did not cause genetic damage in cultured bacterial cells.

Polyimide

- Skin irritation : animals (unspecified species)
No skin irritation
- Eye irritation : animals (unspecified species)
no data available

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SECTION 12. ECOLOGICAL INFORMATION

Aquatic Toxicity

N-Methyl-2-pyrrolidone

96 h LC50 : Oncorhynchus mykiss (rainbow trout) > 500 mg/l

72 h EC50 : Algae > 500 mg/l

1,2,4-Trimethylbenzene

96 h LC50 : Pimephales promelas (fathead minnow) 7.72 mg/l

Environmental Fate

N-Methyl-2-pyrrolidone

Biodegradability : Readily biodegradable, according to appropriate OECD test.

Bioaccumulation : Accumulation in aquatic organisms is unlikely.

Additional ecological information : No data is available on the product itself.

SECTION 13. DISPOSAL CONSIDERATIONS

Waste Disposal : In accordance with local and national regulations. Must be incinerated in a suitable incineration plant holding a permit delivered by the competent authorities. Do not contaminate ponds, waterways or ditches with chemical or used container.

Environmental Hazards : Dispose of as unused product.

SECTION 14. TRANSPORT INFORMATION

DOT UN number : 1993

Proper shipping name : Combustible liquid, n.o.s. (N-Methyl-2-pyrrolidone)

Class : C

Packing group : III

Labelling No. : NON

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Reportable Quantity : 100 lbs Xylene

Class C = Combustible liquid

Not regulated in quantities less than 119 gallons (450 litres) in one container.

Not classified as dangerous in the meaning of sea and air transport regulations.

SECTION 15. REGULATORY INFORMATION

TSCA Status	: On the inventory, or in compliance with the inventory
SARA 313 Regulated Chemical(s)	: N-Methyl-2-pyrrolidone , 1,2,4-Trimethylbenzene
Title III hazard classification	: Acute Health Hazard: No Chronic Health Hazard: Yes Fire: Yes Reactivity/Physical hazard: No Pressure: No
CERCLA Reportable Quantity	: 27,027 lbs Based on the percentage composition of this chemical in the product.: Xylene
California Prop. 65	: WARNING! This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.N-Methyl-2-pyrrolidone WARNING! This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.N-Methyl-2-pyrrolidone
PA Right to Know Regulated Chemical(s)	: Substances on the Pennsylvania Hazardous Substances List present at a concentration of 1% or more (0.01% for Special Hazardous Substances): N-Methyl-2-pyrrolidone , 1,2,4-Trimethylbenzene
NJ Right to Know Regulated Chemical(s)	: Substances on the New Jersey Workplace Hazardous Substance List present at a concentration of 1% or more (0.1% for substances identified as carcinogens, mutagens or teratogens): 1,2,4-Trimethylbenzene

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SECTION 16. OTHER INFORMATION

Contact person : HD Microsystems™, Customer Service, 800-346-5656

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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