

**PI 2611**

Version 2.2

Revision Date 01/02/2014

Ref. 130000024521

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 2611  
MSDS Number : 130000024521  
  
Product Use : Polyimide coating for semi-conductor industry  
  
Manufacturer : HD Microsystems™  
250 Cheesequake Road  
Parlin, New Jersey 08859  
  
Product Information : 800-346-5656  
Medical Emergency : 1-800-441-3637 (outside the U.S. 1-302-774-1139)  
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.  
  
Eyes : Contact with eyes may cause irritation.  
  
Inhalation : Altered respiratory rate  
  
Ingestion : Effects due to ingestion may include: altered blood chemistry, Kidney effects, Respiratory tract damage.  
  
Repeated exposure : The material may be absorbed through the skin.  
  
Target Organ : 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.

**PI 2611**

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**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

Component	CAS-No.	Concentration
N-Methyl-2-pyrrolidone	872-50-4	85 - 95 %
Polyimide		10 - 20 %

Any component not specifically identified is considered a trade secret. Properties and potential hazards of any trade secret component are included in this material safety data sheet.

**SECTION 4. FIRST AID MEASURES**

- Skin contact : Wash off with soap and water. Get medical attention if irritation develops and persists. Wash contaminated clothing before re-use.
- Eye contact : Immediately flush eyes for at least 15 minutes. Get medical attention.
- Inhalation : If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.
- Ingestion : If swallowed Rinse mouth with water. Call a physician or poison control centre immediately. DO NOT induce vomiting unless directed to do so by a physician or poison control center.

**SECTION 5. FIREFIGHTING MEASURES**

- Flammable Properties
- Flash point : 93 °C (199 °F)  
Method : closed cup
- Fire and Explosion Hazard : Hazardous decomposition products formed under fire conditions. (see also section 10) Avoid breathing decomposition products.

**PI 2611**

Version 2.2

Revision Date 01/02/2014

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Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Water spray, Carbon dioxide (CO<sub>2</sub>), Dry chemical, Foam

Firefighting Instructions : Wear self-contained breathing apparatus and protective suit. Evacuate personnel to safe areas. Stop spill/release if it can be done with minimal risk. Do not allow run-off from fire fighting to enter drains or water courses.

**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) : Avoid contact with skin, eyes and clothing. Ensure adequate ventilation. Wear suitable protective equipment.

Spill Cleanup : Contain spill. Soak up with inert absorbent material. Collect and contain contaminated absorbent and dike material for disposal. Keep in suitable, closed containers for disposal. Ventilate the area. Clean contaminated surface thoroughly.

Accidental Release Measures : Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. Clean contaminated floors and objects thoroughly while observing environmental regulations. Dispose of in accordance with local regulations.

**SECTION 7. HANDLING AND STORAGE**

Handling (Personnel) : Avoid inhalation, ingestion and contact with skin and eyes. Do not use in areas without adequate ventilation. Keep container closed when not in use. Take care to avoid waste and spillage when weighing, loading and mixing the product.  
Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing. Contaminated work clothing should not be allowed out of the workplace. Remove contaminated clothing and protective equipment before entering eating areas. Remove and wash contaminated clothing before re-use.

**PI 2611**

Version 2.2

Revision Date 01/02/2014

Ref. 130000024521

- Handling (Physical Aspects) : Avoid formation of dust and aerosols. Keep away from heat and sources of ignition.
- Storage : Store in original container. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from sources of ignition - No smoking. Do not store or consume food, drink or tobacco in areas where they may become contaminated with this material. Keep container closed when not in use. Do not reuse empty container.
- Storage temperature : -20 - -10 °C (-4 - 14 °F)

**SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

- Engineering controls : Local exhaust or a laboratory hood should be used when handling the materials. Maintain air concentrations below occupational exposure standards.
- Personal protective equipment
  - Respiratory protection : Provide adequate ventilation. No personal respiratory protective equipment normally required. Where there is potential for airborne exposures in excess of applicable limits, wear approved respiratory protection with dust/mist cartridge. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Consult the respirator manufacturer to determine the appropriate type of equipment for a given application. Observe respirator use limitations specified by the manufacturer.
  - Hand protection : Material: Solvent-resistant gloves  
Additional protection: Gloves must be inspected prior to use., Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough., As the product is a mixture of several substances, the durability of the glove materials cannot be calculated in advance and has to be tested before use., The choice of an appropriate glove does not only depend on its material but also on other quality features and is different from one producer to the other., Request information on glove permeation properties from the glove supplier., 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 : Wear safety glasses with side shields.
  - Skin and body protection : Choose body protection in relation to its type, to the concentration and

**PI 2611**

Version 2.2

Revision Date 01/02/2014

Ref. 130000024521

amount of dangerous substances, and to the specific work-place.  
Lightweight protective clothing  
Safety shoes

Exposure Guidelines  
Exposure Limit Values

None established.

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

Form : liquid  
Color : brown  
Odor : amine-like  
Viscosity : 11,500 - 13,000 mPa.s at 25 °C (77 °F)

**SECTION 10. STABILITY AND REACTIVITY**

Conditions to avoid : Heat, flames and sparks.  
Hazardous decomposition products : Hazardous thermal decomposition products may include:  
Carbon dioxide (CO<sub>2</sub>), Carbon monoxide, Hydrocarbons, Formaldehyde,  
Nitrogen oxides (NO<sub>x</sub>)  
Hazardous reactions : Polymerization will not occur.

**SECTION 11. TOXICOLOGICAL INFORMATION**

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

**PI 2611**

Version 2.2

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Skin irritation	:	No skin irritation, rabbit
Eye irritation	:	Eye irritation, rabbit
Skin sensitization	:	Does not cause skin sensitisation., mouse
Repeated dose toxicity	:	Oral rat
		Reduced body weight gain
		Inhalation rat
		Respiratory irritation
		Dermal rabbit
		No toxicologically significant effects were found.

**SECTION 12. ECOLOGICAL INFORMATION**

## Aquatic Toxicity

N-Methyl-2-pyrrolidone

96 h LC50	:	Oncorhynchus mykiss (rainbow trout) > 500 mg/l
72 h ErC50	:	Desmodesmus subspicatus (green algae) 600.5 mg/l
72 h NOEC	:	Desmodesmus subspicatus (green algae) 125 mg/l
21 d	:	NOEC Daphnia magna (Water flea) 12.5 mg/l OECD Test Guideline 211

## Environmental Fate

N-Methyl-2-pyrrolidone

Biodegradability	:	73 % OECD Test Guideline 301C Readily biodegradable, according to appropriate OECD test.
Bioaccumulation	:	Accumulation in aquatic organisms is unlikely.

**PI 2611**

Version 2.2

Revision Date 01/02/2014

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**SECTION 13. DISPOSAL CONSIDERATIONS**

- Waste Disposal : If recycling is not practicable, dispose of in compliance with local regulations. Never place unused product down any indoor or out door drain.
- Container Disposal : Do not reuse empty container. Contaminated/not cleaned containers should be treated/handled like product waste. Dispose of container properly. Refer to applicable Local, State/Provincial, and Federal Regulations, as well as industry Standards.

**SECTION 14. TRANSPORT INFORMATION**

Not classified as dangerous in the meaning of transport regulations.

**SECTION 15. REGULATORY INFORMATION**

- TSCA (US) Status : On the inventory, or in compliance with the inventory
- SARA 313 Regulated Chemical(s) : N-Methyl-2-pyrrolidone
- 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
- 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

**SECTION 16. OTHER INFORMATION**

**PI 2611**

Version 2.2

Revision Date 01/02/2014

Ref. 130000024521

Do not use for medical-clinical purposes.  
For further information contact the local DuPont office or DuPont's nominated distributors.

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

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