

HD 8820

Version 2.0

Revision Date 10/11/2011

Ref. 130000026966

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 : HD 8820
MSDS Number : 130000026966

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.

Eyes : Contact with eyes may cause irritation.

Inhalation : Respiratory irritation Altered respiratory rate

Ingestion : May be harmful if swallowed.

Repeated exposure : Liver effects

Target Organs : Respiratory system, Central nervous system

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.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

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Component	CAS-No.	Concentration
4-Butyrolactone	96-48-0	45 - 55 %
Polyamide		30 - 40 %
1-Methoxy-2-propyl acetate	108-65-6	1 - 10 %
Photo Active Compound		1 - 10 %
Proprietary Additives		1 - 10 %

SECTION 4. FIRST AID MEASURES

- Skin contact : Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes.
- Eye contact : Rinse thoroughly with plenty of water, also under the eyelids. Consult a physician.
- Inhalation : Move to fresh air. Artificial respiration and/or oxygen may be necessary. Consult a physician.
- Ingestion : Do NOT induce vomiting. Immediately give large quantities of water to drink. Never give anything by mouth to an unconscious person. Consult a physician.
- General advice : If symptoms persist, call a physician.

SECTION 5. FIREFIGHTING MEASURES

- Flammable Properties
- Flash point : 76 °C (169 °F)
- Fire and Explosion Hazard : Vapours may form explosive mixtures with air.

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- 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).
- 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.

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.

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Storage : Keep container closed to prevent contamination. Keep away from sources of ignition - No smoking. Keep away from direct sunlight.

Storage temperature : > -20 - < -10 °C (> -4 - < 14 °F)

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls : Ensure adequate ventilation, especially in confined areas.

Personal protective equipment

Respiratory protection : If the occupational exposure limits cannot be met, in exceptional cases suitable respiratory equipment should be worn only for a short period of time.

Hand protection

: Material: butyl-rubber
Break through time: 60 min
Permeation rate: 480 min
Glove thickness: 0.7 mm
Additional protection: The exact break through time can be obtained from the protective glove producer and this has to be observed., Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact).

Eye protection : Safety glasses with side-shields

Exposure Guidelines

Exposure Limit Values

1-Methoxy-2-propyl acetate

AEL *	(DUPONT)	100 ppm	15 minute TWA
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Ethanol

PEL:	(OSHA)	1,000 ppm	1,900 mg/m3	8 hr. TWA
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TLV	(ACGIH)	1,000 ppm	STEL
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AEL *	(DUPONT)	1,000 ppm	8 & 12 hr. TWA
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* 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	: red
Odor	: aliphatic
Water solubility	: partly soluble

SECTION 10. STABILITY AND REACTIVITY

Stability	: Stable at normal temperatures and storage conditions.
Conditions to avoid	: Heat, flames and sparks. Strong sunlight for prolonged periods.
Incompatibility	: Strong acids and strong bases Strong oxidizing agents, Oxygen
Hazardous decomposition products	: Carbon dioxide (CO ₂), Carbon monoxide, nitrogen oxides (NO _x), Hydrocarbons
Hazardous reactions	: Hazardous polymerisation does not occur. The material may slowly polymerize if heated or if inerted with nitrogen.

SECTION 11. TOXICOLOGICAL INFORMATION

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Skin irritation : Irritating to skin.

Eye irritation : Irritating to eyes.

Further information : Vapours may cause irritation to the eyes, respiratory system and the skin. Inhalation of high vapour concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.

4-Butyrolactone

Dermal LD50 : > 5,000 mg/kg , guinea pig

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Oral LD50	:	1,580 mg/kg , rat
Inhalation	:	An LC50/inhalation/4h/rat could not be determined because no mortality of rats was observed at the maximum achievable concentration.
Skin sensitization	:	Animal test did not cause sensitization by skin contact., guinea pig
Repeated dose toxicity	:	Oral rat No adverse effect has been observed in chronic toxicity tests.
Carcinogenicity	:	Animal testing did not show any carcinogenic effects.
Mutagenicity	:	Overall weight of evidence indicates that the substance is not mutagenic. Did not cause genetic damage in animals. Genetic damage in cultured mammalian cells was observed in some laboratory tests but not in others. Did not cause genetic damage in cultured bacterial cells.
Teratogenicity	:	Animal testing showed no developmental toxicity.
1-Methoxy-2-propyl acetate		
Dermal LD50	:	> 5,000 mg/kg , rabbit
Oral LD50	:	8,532 mg/kg , rat
Skin sensitization	:	Did not cause sensitization on laboratory animals., guinea pig
Repeated dose toxicity	:	Inhalation multiple species Respiratory irritation
Mutagenicity	:	Tests on bacterial or mammalian cell cultures did not show mutagenic effects.
Reproductive toxicity	:	Animal testing showed no reproductive toxicity.
Teratogenicity	:	Animal testing showed no developmental toxicity.

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SECTION 12. ECOLOGICAL INFORMATION

Aquatic Toxicity

4-Butyrolactone

- 96 h LC50 : *Leuciscus idus* (Golden orfe) 316 mg/l
72 h EC50 : *Desmodesmus subspicatus* (green algae) 360 mg/l
48 h EC50 : *Daphnia magna* (Water flea) > 500 mg/l

1-Methoxy-2-propyl acetate

- 96 h LC50 : *Oryzias latipes* (medaka) > 100 mg/l
96 h LC50 : *Oncorhynchus mykiss* (rainbow trout) 134 mg/l
96 h LC50 : *Pimephales promelas* (fathead minnow) 161 mg/l
72 h EC50 : *Scenedesmus capricornutum* (fresh water algae) > 1,000 mg/l
48 h EC50 : *Daphnia magna* (Water flea) 380 mg/l

Environmental Fate

4-Butyrolactone

- Biodegradability : 60 - 92 %
Readily biodegradable.
Bioaccumulation : Bioaccumulation is unlikely.

1-Methoxy-2-propyl acetate

- Biodegradability : Readily biodegradable.

SECTION 13. DISPOSAL CONSIDERATIONS

- Waste Disposal : In accordance with local and national regulations.
Environmental Hazards : Can be incinerated, when in compliance with local regulations.

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SECTION 14. TRANSPORT INFORMATION

Not classified as dangerous in the meaning of transport regulations.

SECTION 15. REGULATORY INFORMATION

- SARA 313 Regulated Chemical(s) : SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.
- California Prop. 65 : WARNING! This product contains a chemical known to the State of California to cause cancer. Ethanol
WARNING! This product contains a chemical known to the State of California to cause birth defects or other reproductive harm. 2-Ethoxyethanol , Ethanol , N-Methyl-2-pyrrolidone
- 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): Ethanol , N-Methyl-2-pyrrolidone

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

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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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