

Material Safety Data Sheet



PI2556 PI-2556 Revised 1-OCT-2009 Printed 1-OCT-2009

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Tradenames and Synonyms

Pyralin(R)polyimide precursor coatings, Polyamic acid

Company Identification

MANUFACTURER/DISTRIBUTOR

HD MicroSystems
Cheesequake Road
Parlin
New Jersey
USA
08859

PHONE NUMBERS

Product Information : (800) 346-5656
Transport Emergency : (800) 424-9300 (Outside the US (703)
527-3887)
Medical Emergency : (800) 441-7515 (Outside the US (302)
774-1000)

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
*n-Methylpyrrolidone	872-50-4	>60
Polyamic acid of Benzophenone	31942-21-9	10-30
Tetracarboxylic Dianhydride/4,4-Oxydianiline/m-Phenylenediamine Polymer		
1-Methoxy-2-Propanol	107-98-2	10-30
Aromatic Hydrocarbon	64742-95-6	10-30
Aromatic Hydrocarbon includes:		
*1,2,4-Trimethylbenzene	95-63-6	1-5

* Disclosure as a toxic chemical is required under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

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HAZARDS IDENTIFICATION

Potential Health Effects

This product is a physical mixture. The health effects information about this product is based on the individual ingredients:

>>>n-Methylpyrrolidone

INHALATION may cause irritation of the nose and throat with sneezing, sore throat or runny nose; or non-specific effects such as headache, nausea and weakness. SKIN CONTACT may cause skin irritation with itching, burning, redness, swelling or rash. Human experience or case reports have identified the following POTENTIAL EFFECTS FROM OVEREXPOSURE: Prolonged contact may cause severe skin irritation with burning, redness, swelling, pain, blisters, cracking, or rash. There are inconclusive or unverified reports of human sensitization. Skin permeation may occur in amounts capable of producing the effects of systemic toxicity. EYE CONTACT may cause eye irritation with tearing, pain or blurred vision. Low vapor concentrations did cause eye irritation in some individuals.

>>>Aromatic Hydrocarbon

****Toxic effects described in animals include: BY SKIN OR EYE CONTACT: Skin photosensitization; Moderate skin irritation; Slight eye irritation; BY INHALATION: Respiration rate changes; Tremors; Incoordination; Salivation; Hyperactivity; Nonspecific effects, e.g., weight loss and irritation. ****Human health effects of overexposure may include: BY SKIN OR EYE CONTACT: Skin irritation with discomfort or rash; Eye irritation with discomfort, tearing, or blurring of vision; BY INHALATION: Irritation of the upper respiratory passages with coughing and discomfort; BY INGESTION: Nonspecific discomfort, e.g., nausea, headache or weakness; Temporary nervous system depression with anaesthetic effects, e.g., dizziness, headache, confusion, incoordination, and loss of consciousness. ***In addition: Skin contact may cause photosensitization in susceptible individuals.

>>>Polyamic acid of Benzophenone Tetracarboxylic Dianhydride/4,4-Oxydianiline/m-Phenylenediamine (Polymer)
****Toxic effects described in animals include: BY SKIN OR EYE CONTACT: Skin irritation; Skin sensitization; Eye irritation.

>>>1-Methoxy-2-Propanol

****Toxic effects described in animals include: BY SKIN OR EYE CONTACT: Slight skin irritation; Eye irritation; Central nervous system effects; BY INHALATION: Central nervous system effects; Liver effects; Lung effects. Toxic effects of repeated or prolonged animal exposures include: BY SKIN OR EYE CONTACT: Kidney effects; Death; BY INHALATION:

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(HAZARDS IDENTIFICATION - Continued)

Central nervous system effects; Lower weight gain; Liver effects; Kidney effects; BY INGESTION: Weight loss; Central nervous system effects; Kidney effects; Liver effects; ****Additional animal tests have shown: Developmental toxicity at dosage levels showing maternal toxicity; No reproductive toxicity. ****Human health effects of overexposure may include: BY SKIN OR EYE CONTACT: Skin irritation with discomfort or rash; Eye irritation with discomfort, tearing, or blurring of vision; BY INHALATION: Irritation of the upper respiratory passages with coughing and discomfort; BY INGESTION: Temporary nervous system depression with anaesthetic effects, e.g., dizziness, headache, confusion, incoordination, and loss of consciousness. ***In addition: BY SKIN OR EYE CONTACT: Skin permeation can occur in amounts capable of producing effects of systemic toxicity.

>>>1,2,4-Trimethylbenzene

Human health effects of overexposure may include: BY SKIN CONTACT: Skin irritation with discomfort or rash; BY EYE CONTACT: Eye irritation with discomfort, tearing, or blurring of vision; BY INHALATION: Temporary nervous system depression with anaesthetic effects, e.g., dizziness, headache, confusion, incoordination, and loss of consciousness; Temporary lung irritation effects with cough, discomfort, difficulty breathing or shortness of breath; Asthma-like reactions with shortness of breath, wheezing, or cough, and possibly occurring on subsequent re-exposure to concentrations below established exposure limits. In addition: BY SKIN CONTACT: There are no reports on human sensitization.

Individuals may have increased susceptibility to the hazards of overexposure to ingredient(s) of this product if they have pre-existing diseases of the: Central nervous system; Liver.

Carcinogenicity Information

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

FIRST AID MEASURES

First Aid

INHALATION

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

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(FIRST AID MEASURES - Continued)

SKIN CONTACT

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician. Wash contaminated clothing before reuse.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

If swallowed, do not induce vomiting. Immediately give 2 glasses of water. Never give anything by mouth to an unconscious person. Call a physician.

Notes to Physicians

Activated charcoal mixture may be beneficial. Suspend 50 g activated charcoal in 400 mL water and mix well. Administer 5 mL/kg, or 350 mL for an average adult.

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point : 130 F (54 C)
Method : Setaflash Closed Cup - SCC.

FIRE & EXPLOSION HAZARDS:

KEEP AWAY FROM SPARKS AND OPEN FLAMES. Do not smoke in area with open product; If the product may be heated above its flashpoint during processing, remove sources of ignition such as open sparks, flames or static discharge to prevent vapor ignition.

Extinguishing Media

Water Spray, Dry Chemical, Carbon Dioxide.

Fire Fighting Instructions

Toxic decomposition products may form under fire conditions. (See Decomposition Section.); Wear a full facepiece, positive pressure, self-contained breathing apparatus (SCBA); Dispose of residues per federal, state, and local regulation. (See Waste Disposal Section.).

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ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

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

Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus.

Spill Clean Up

Spill, Leak or Release:

FOR SMALL SPILLS, absorb on rags, sand or other absorbent material;

FOR LARGE SPILLS, get workers out of affected area. If flammable liquids or vapors may be present, turn off electrical devices or other sources of sparks or flames.

WEAR PROTECTIVE EQUIPMENT. Use supplied-air respiratory protection if vapor concentrations are not known; Contain spill at source by diking or absorbing with sand. Do not allow spill to spread to or intentionally flush to sewer or ground. Wash area thoroughly. Adequately ventilate area; Spill residue, cleaning rags and absorbent may be considered hazardous. (See Waste Disposal Section.).

HANDLING AND STORAGE

Handling (Personnel)

Contaminated clothing and cleaning materials, etc. should be considered hazardous until decontaminated or properly disposed of. (See Waste Disposal Section.).

Storage

Store product in a refrigerated location (0-4F), away from sunlight or ultraviolet light to ensure product viscosity stability.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

Use only with adequate ventilation.

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(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

Personal Protective Equipment

Respiratory Protection:

A NIOSH/MSHA approved full-face mask equipped with chemical cartridges approved for methylamine may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air purifying respirators is limited. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, when exposure levels are not known, or in any other circumstances where air purifying respirators may not provide adequate protection; For most conditions, no respiratory protection should be needed; however, if handling at elevated temperatures without sufficient ventilation, use an approved air-purifying respirator. In dusty atmospheres, use an approved dust respirator; Selection of a suitable respirator will depend on the properties of the contaminant(s) and their actual expected air concentration(s) versus applicable limits. Consult ANSI Standard Z88.2 for decision logic to select appropriate NIOSH/MSHA approved respirators; A NIOSH/MSHA/OSHA approved air purifying respiratory with a dust/mist cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed limits. Protection provided by air purifying respirators is limited. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known or any other circumstances where air purifying respirators may not provide adequate protection; Use a positive pressure air-supplied respirator if concentrations may exceed exposure limits. Air-purifying respirators are inadequate for this material; If respirators are needed to meet applicable limits, a respiratory protection program up to the level of OSHA Standard 29 CFR 1910.134 is mandatory. This includes air monitoring, selection, medical approval training, fit testing, inspection, maintenance, cleaning, storage, etc; An OSHA/NIOSH respirator for protection against Nuisance Dust is recommended.

Gloves:

Gloves should be used when the possibility of skin contact exists; The suitability of a particular glove and glove material should be determined as part of an overall glove program. Considerations may include chemical breakthrough time; permeation rate; abrasion, cut and puncture resistance; flexibility; duration of contact; etc.

Other Protection Practices:

Appropriate eye protection such as chemical splash

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(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

goggles should be used if the possibility of eye contact exists; Protective outer clothing should be used where the possibility of body contact exists. Contaminated work clothing should not be allowed out of the workplace; Do not smoke, consume or store food or drinks in areas where the product is handled or stored. After handling the product, wash hands thoroughly before leaving the work area; Additional engineering controls, work practices and training may be required depending on exposure levels. These are discussed in the OSHA Respiratory Protection Standard (29 CFR 1910.134) and OSHA Hazard Communication Standard (29 CFR 1910.1200); Do not breath dust. Avoid contact with eyes, skin, or clothing. Wash thoroughly after handling.

Exposure Guidelines

Applicable Exposure Limits

n-Methylpyrrolidone

PEL (OSHA) : None Established
 TLV (ACGIH) : None Established
 AEL * () : 5 ppm, 8 & 12 Hr. TWA, Skin
 WEEL (AIHA) : 10 ppm, 8 Hr. TWA, Skin

1-Methoxy-2-Propanol

PEL (OSHA) : None Established
 TLV (ACGIH) : 100 ppm, 369 mg/m³, 8 Hr. TWA
 STEL 150 ppm, 553 mg/m³
 AEL * () : None Established

Aromatic Hydrocarbon

PEL (OSHA) : None Established
 TLV (ACGIH) : None Established
 AEL * () : 50 ppm, 8 Hr. TWA

1,2,4-Trimethylbenzene

PEL (OSHA) : 25 ppm, 125 mg/m³, 8 Hr. TWA
 TLV (ACGIH) : 25 ppm, 123 mg/m³, 8 Hr. TWA
 AEL * () : None Established

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

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PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Form : Viscous Liquid.
Color : Colorless to Amber.
Solubility in Water : Slight
Odor : Aromatic.

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and recommended storage conditions.

Conditions to Avoid

Avoid contact with:
Reducing agents; Oxidizing agents; Bases; Acids; Strong Acids; Strong Oxidizers.

Decomposition

Decomposition products at high temperature may include: Carbon monoxide (CO); Nitrogen oxides; Carbon dioxide; water; Various hydrocarbons

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

>>>Aromatic Hydrocarbon
Inhalation 6 hour LC50: > 14.4 mg/L in rats
Oral LD50: ~ 5000 mg/kg in rats.

>>>n-Methylpyrrolidone
Inhalation 4 hour ALC: 1.7 mg/L in rats (Moderately toxic)
Skin absorption LD50: > 8,000 mg/kg in rabbits (Slightly toxic)
Oral LD50: 4,320 mg/kg (Slightly toxic).

>>>1-Methoxy-2-Propanol
Inhalation 4 hour LC50: 15,000 ppm in rats
Skin absorption LD50: 14,000 mg/kg in rabbits
Oral LD50: 5,200 mg/kg in rats.

>>>1,2,4-Trimethylbenzene
Inhalation 4 hour LC50: 18,000 mg/m3 in rats

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(TOXICOLOGICAL INFORMATION - Continued)

(Soviet data)

Skin absorption LD50: No information found.

Oral LD50: 5,000 mg.kg in rats (Soviet Data)

DISPOSAL CONSIDERATIONS

Waste Disposal

Components of this product may be considered hazardous;
Consult applicable Federal, State, and local
regulations for allowable disposal methods.

Container Disposal

Empty product containers should be considered hazardous
until decontaminated or properly disposed of. (See Waste
Disposal Section.).

REGULATORY INFORMATION

U.S. Federal Regulations

All Ingredients in This Product Are TSCA Listed/Reported.

TSCA 12(b) Export Notification: This product contains a
chemical subject to 12(b) Export Notification.

The following ingredients are subject to the reporting
requirements of section 313 of Title III of the Superfund
Amendment and Reauthorization Act of 1986 and 40 CFR part
372:

INGREDIENT(S)	Weight %
n-Methylpyrrolidone	>60%
1,2,4-Trimethylbenzene	5-10%

State Regulations (U.S.)

WARNING - SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE
CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM-
n-Methylpyrrolidone; 1,4-dioxane

Canadian Regulations

DSL Reported/Included

Canadian WHMIS Classification:
Class B, Div 3; D2B.

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OTHER INFORMATION

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS : HD MicroSystems(TM)
Address : Cheesequake Road
Parlin, NJ 08859
Telephone : 1-800-346-5656

Indicates updated section.

End of MSDS