Material Safety Data Sheet

VM-652

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CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Tradenames and Synonyms

Semiconductor Material

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	%
1-Methoxy-2-Propanol	107-98-2	>60
2-Methoxy-1-Propanol	1589-47-5	0.1-1

HAZARDS IDENTIFICATION

Potential Health Effects

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

OVERVIEW: The most likely routes of worker overexposure to this product are skin contact and inhalation. Skin irritation and / or other effects of skin contact are easily avoided by: using proper gloves, reading "Protection Information" section below; not touching exposed skin (like your neck or face) or clothing with contaminated gloves; using proper glove removal techniques; washing affected areas immediately if skin contact occurs; washing hands before leaving the work area. Inhalation exposure would occur by breathing the product's volatile components, which begin to

(HAZARDS IDENTIFICATION - Continued)

evaporate at room temper ature when product container is opened. Volatile solvents continue to evaporate during room temperature use of the pro duct, such as pouring from the jar to the dispensing machine and spin coating. Mist and solvent vapors will evolve if a spray application is used. During the wafer or substrate dry ing (125 - 150 deg C) and the final curing (300 - 450 deg C) any remaining solvent shall volatilize.

Consideration should be given to avoiding overexposure to chemicals used in related processes. For example, avoid over exposure to chemicals used as "product thinners", solvents used to clean process equipment, and other chemicals used in the operation such as wafer etchants and parts cleaners. Personnel performing maintenance and repairs on dispensing equipment (e.g. spin coaters) may need personnel protective equipment such as respirators, gloves, goggles, and protective clothing to prevent exposure to accumulated materials. Well-designed area and personal air sampling /analysis can show whether exposures are within the required / recommended limits. Properly designed engineering controls such as local ventilation and process enclosures are effective ways to reduce the environmental concentrations to permissible limits. Respirators should be used when engineering and work practice controls are not technically feasible, or when such con trols are in the process of being installed, or when the eng ineering controls fail and need to be supplemented. (See the "Exposure Limits" table below for more information). Process controls and procedures must comply with all applicable Federal, State (or Provincial) and Local safety, health and environmental laws, regulations and ordinances.

In addition, it is always prudent to use all the practical means to limit worker exposure to chemicals. Significant differences in overall exposure can be made by using practical measures such as:

* Inhalation - Minimize exposure by keeping containers of product, solvents, solvent-dampened clean wipes, etc, covered;

* Skin - Avoid contact by selecting proper gloves, and know how to them properly;

* Eye - Wear chemical safety glasses when handling the product, solvents and waste materials, and where there is potential for splashing wear chemical goggles and face shield;

* Ingestion - Avoid inadvertent ingestion by washing the hands before eating, drinking, or smoking, and restrict these activities to locations outside of the work area.

(HAZARDS IDENTIFICATION - Continued)

PRINCIPAL HEALTH EFFECTS:

>>>1-Methoxy-2-Propanol
****Toxic effects described in animals include: BY SKIN CONTACT: Central nervous system effects; BY INHALATION: Central nervous system effects; Lung effects; Liver effects. Toxic effects of repeated or prolonged animal exposures include: BY SKIN CONTACT: Kidney damage; Narcosis; BY EYE CONTACT: May cause conjunctivitis; BY INHALATION: Lower weight gain; Kidney effects; BY INGESTION: Central nervous system effects; Weight loss; Liver effects; Kidney effects;

****Additional animal tests have shown: Developmental toxicity at dosage levels showing maternal toxicity; Reproductive toxicity at dose levels showing other toxic effects; No mutagenic toxicity in bacterial or mammalian cell cultures, but untested in animals; No animal data available to define carcinogenicity.

****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: 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. ****Human effects of higher level acute, repeated or chronic overexposure may include: BY SKIN CONTACT: Skin permeation may occur in amounts capable of producing the effects of systemic toxicity; BY CONTACT, INHALATION, OR INGESTION: No acceptable information to confidently predict effects of chronic human exposure.

>>>2-Methoxy-1-Propanol
****Toxic effects described in animals include: BY INHALATION: Central nervous system effects. Toxic effects of repeated or prolonged animal exposures include: BY SKIN CONTACT: Increased kidney weight; Anaesthetic effects; BY INHALATION: Liver effects; Lung effects; BY INGESTION: Central nervous system effects; Kidney effects;

****Additional animal tests have shown: BY CONTACT, INHALATION, OR INGESTION: No animal data available to define the carcinogenicity, developmental, reproductive or mutagenic hazards of this material.

****Human health effects of overexposure may include: BY EYE CONTACT: Tearing; Irritation; BY INHALATION: Drowsiness; Headache; Nausea; Irritation; Intoxication; BY INGESTION: Drowsiness; Difficulty in breathing; Liver enlargement; Intoxication. ****Human effects of higher level acute, repeated or chronic overexposure may include: BY INHALATION: May cause lung damage; BY CONTACT OR INGESTION: No

(HAZARDS IDENTIFICATION - Continued)

acceptable information to confidently predict effects of chronic human exposure.

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

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 : 93 F (34 C)
Method : Closed Cup.

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

Wear full protective equipment. Thoroughly decontaminate all equipment used in firefighting efforts before returning to service.

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.).

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

(ACCIDENTAL RELEASE MEASURES - Continued)

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.).

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

Use only with adequate ventilation.

Personal Protective Equipment

Respiratory Protection:
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.. Selection of a suitable respirator will depend on the properties of the contaminant(s) and their actual or expected air concentration(s) versus applicable limits. Consult ANSI Standard Z88.2 for decision logic to select appropriate NIOSH/MESA approved respirators;

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 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

(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

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
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 *	(DuPont)	: None Established

* 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.

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Form	: Liquid.
Color	: Colorless to Amber.
Solubility in Water	: Soluble
Odor	: Alcohol.

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and recommended storage conditions.

Conditions to Avoid

Reducing agents; Oxidizing agents; Bases; Acids; Strong Acids; Strong Oxidizers; Inert gases; Direct Sunlight.

Incompatibility with Other Materials

Reducing agents; Oxidizing agents; Bases; Acids; Strong Acids; Strong Oxidizers; Inert gases; Direct Sunlight.

Decomposition

Carbon monoxide (CO); Nitrogen oxides; Carbon dioxide; water; Various hydrocarbons

(STABILITY AND REACTIVITY - Continued)

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

>>>1-Methoxy-2-Propanol
Skin LD50 [Rabbits]: 14,000 mg/kg
13,000 mg/kg
Inhalation LD50 4 hr [Rats]: 15,000 ppm
Oral LD50 [Rats]: 5,200 mg/kg
7,200 mg/kg.

>>>2-Methoxy-1-Propanol
No information available.

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.

No ingredients of this product 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.

State Regulations (U.S.)

CALIFORNIA PROPOSITION 65: WARNING: This product does not contain chemical known to the state of California to cause cancer, birth defects, or other reproductive harm.

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.

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End of MSDS