

MATERIAL SAFETY DATA SHEET

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Mitsubishi TDP-HL Etching Solution for TDP system		DATE: August 25, 2010
PRODUCT CODE: TDP-HL		
TRADE NAME: Mitsubishi TDP-HL Etching Solution for TDP system GENERAL USE: Etching Solution PRODUCT DESCRIPTION: Liquid, with slight lactone odor.		
MANUFACTURER: Mitsubishi Imaging (MPM), Inc.	DATE PREPARED: August 24, 2010	SUPERSEDES: New issue
ADDRESS (NUMBER, STREET, P.O. BOX): 555 Theodore Fremd Avenue	TELEPHONE NUMBER FOR INFORMATION / Customer Service: (914) 925-3200	
(CITY, STATE AND ZIP CODE): Rye, NY 10580	COUNTRY: USA	Chemtrec 24-HOUR EMERGENCY TELEPHONE NUMBER 1-800-424-9300 01-703-527-3887 North America Toll Free International

SECTION 2 - HAZARDOUS INGREDIENTS

Hazardous Components	% (by Weight)	CAS #	EINECS #	Hazard Symbol	RISK PHRASES (Full Text Section 15)
Sodium Hydroxide (a,b)	0.1-1.0	1310-73-2	215-185-5	Xi	R36/38
Succinic Acid	0.1-1.0	110-15-6	203-740-4	Xi	R36/37/38
Glucono-1,5-lactone	0.5-2.5	90-80-2	202-016-5	Xi	R36/37/38
Amorphous silica dispersion	5.0-10.0	7631-86-9	231-545-4	None	None
Trehalose	1.0-5.0	6138-23-4	Unlisted	Xi	R38
Magnesium nitrate hexahydrate	0.5-2.5	13446-18-9	233-826-7	O	R8

(a) See Section 15

(b) A "C" in the OSHA PEL or ACGIH TWA column indicates ceiling limits, the concentration that should not be exceeded during any part of the working exposure.

NOTES: This Material Safety Data Sheet is prepared to comply with the United States Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (29 CFR 1910.1200), the Canadian Workplace Hazardous Materials Information System (WHMIS), and European Union Directive 91/155/EEC. Hazard symbols and risk phrases are based on maximum listed concentration of each hazardous ingredient. Unlisted ingredients are not "hazardous" per the OSHA Hazard Communication Standard (29 CFR 1910.1200), the Canadian Workplace Hazardous Materials Information System (WHMIS) or the European (GHS) directive 91/155/EEC and are considered trade secrets under US Federal Law (29CFR and 40CFR), Canadian Law (Health Canada Legislation), and European Union Directive 67/548/EEC.

SECTION 3 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Caution! May cause eye and skin irritation. May cause respiratory and digestive tract irritation. If liquid is evaporated to dryness and contact with combustible materials occurs, product may slightly accelerate combustion.

POTENTIAL HEALTH EFFECTS

INHALATION:

Vapors/mists are potentially irritating to upper respiratory tract and mucous membranes.

SKIN:

Capable of causing mild irritation to skin; prolonged and/or repeated exposures may lead to rash or skin dryness.

EYES:

Contact with eyes may result in moderate to severe irritation with pain, redness, and tearing; chemical conjunctivitis may occur.

INGESTION:

Irritating to digestive tract and mucosal membranes; may cause gastric distress, nausea, stomach pains and vomiting.

CARCINOGENICITY:

NTP? NO	IARC MONOGRAPHS? NO	OSHA REGULATED? NO
CALIFORNIA, Prop.65? NO		ESIS NOTATION? NO

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SECTION 4 - FIRST AID MEASURES

INHALATION:
Remove affected person to fresh air; wash mouth and nasal passages with water repeatedly if victim is conscious and alert. If breathing difficulties persist seek medical attention.

EYES:
Remove contact lenses. Immediately flush eyes for 15 minutes in clear running water while holding eyelids open; seek medical attention immediately.

SKIN:
Wash contacted area with soap and water; if irritation persists, seek medical attention.

INGESTION:
DO NOT induce vomiting. Rinse out mouth with water if victim is conscious and alert to surroundings, then give water to sip if victim is able to swallow. Seek medical attention immediately.

SECTION 5 - FIRE FIGHTING MEASURES

GENERAL HAZARDS:
Product is mildly irritating and has low human toxicity. Products of combustion include compounds of carbon, hydrogen, nitrogen and oxygen, including Carbon Monoxide.

EXTINGUISHING MEDIA:
Carbon Dioxide, water, water fog, dry chemical, chemical foam.

FIRE FIGHTING PROCEDURES:
Keep containers cool with water spray to prevent container rupture due to steam buildup.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
None

HAZARDOUS COMBUSTION PRODUCTS:
Smoke, fumes, oxides of carbon, oxides of nitrogen,

SECTION 6 - ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
Wash small spills to sanitary sewer. Large spills - confine spill, soak up with approved absorbent, shovel product into approved container for disposal. For spills in excess of allowable limits (RQ) notify the National Response Center (800) 424 - 8802; refer to CERCLA 40 CFR 302 for detailed instructions concerning reporting requirements.

SECTION 7 - HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:
Keep container closed when not in use; protect containers from abuse; protect from extreme temperatures. Separate from oxidizing materials, metallic powders and other easily oxidized organic materials and reducing agents. Keep this and other chemicals out of reach of children.

SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

HAZARDOUS COMPONENTS	NIOSH				ACGIH		OSHA	
	TWA ppm	TWA mg/m3	STEL ppm	STEL mg/m3	TLV/TWA ppm	TWA mg/m3	PEL ppm	PEL mg/m3
Sodium Hydroxide (a,b)	—	2C	—	—	—	2C	—	—
Succinic Acid	NE	NE	NE	NE	NE	NE	NE	NE
Glucono-1,5-lactone	NE	NE	NE	NE	NE	NE	NE	NE
Amorphous silica dispersion	NE	NE	NE	NE	NE	NE	NE	NE
Trehalose	NE	NE	NE	NE	NE	NE	NE	NE
Magnesium Nitrate Hexahydrate	NE	NE	NE	NE	NE	NE	NE	NE

PERSONAL PROTECTION

RESPIRATORY PROTECTION:
None required while threshold limits (Section 2) are kept below maximum allowable concentrations; if TWA exceeds limits, NIOSH approved respirator must be worn. Refer to 29 CFR 1910.134 or European Standard EN 149 for complete regulations.

PROTECTIVE GLOVES:
Neoprene or rubber gloves with cuffs.

EYE PROTECTION:
Protective eyeglasses or chemical safety goggles. Refer to 29 CFR 1910.133 or European Standard EN166.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT:
None required.

WORK / HYGIENIC PRACTICES:
Practice safe workplace habits. Minimize body contact with this, as well as all chemicals in general.

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SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES			
APPEARANCE AND ODOR Liquid, with slight lactone odor.		VAPOR PRESSURE NA	
pH 5.2 ± 0.3 @25°		SPECIFIC GRAVITY (WATER = 1) 1.063 ± 0.005 @25°C	
BOILING POINT / BOILING RANGE NR		SOLUBILITY IN WATER Complete	
FLASH POINT Non-Flammable		VISCOSITY Not Specified	
FLAMMABLE LIMITS LEL: NA UEL: NA		VAPOR DENSITY (AIR = 1) NA	
AUTO-IGNITION TEMPERATURE ND		EVAPORATION RATE (WATER = 1) NA	
VOLATILE ORGANIC COMPOUND (VOC) INFORMATION There are no known Volatile Organic Compounds (VOCs) in this product.			
SECTION 10 - STABILITY AND REACTIVITY			
STABILITY Stable under normal conditions of use.		CONDITIONS TO AVOID: Extreme temperatures.	
INCOMPATIBILITY (MATERIALS TO AVOID): Strong oxidizers, strong acids, strong alkalis.			
HAZARDOUS DECOMPOSITION OR BYPRODUCTS: Decomposition will not occur if handled and stored properly. In case of a fire, oxides of carbon, hydrocarbons, fumes, and smoke may be produced.			
HAZARDOUS POLYMERIZATION: Will Not Occur.		CONDITIONS TO AVOID: None Related to Polymerization.	
SECTION 11 - TOXICOLOGICAL INFORMATION			
Hazardous Components	CAS # EINECS #	LD50 of Ingredient (Specify Species and Route)	LC50 of Ingredient (Specify Species)
Sodium Hydroxide (a,b)	1310-73-2	40 mg / kg (Intraperitoneal, Mouse)	NE
	215-185-5		
Succinic Acid	110-15-6	2260 mg/kg (Oral, Rat)	NE
	203-740-4		
Glucono-1,5-lactone	90-80-2	NE	NE
	202-016-5		
Amorphous silica dispersion	7631-86-9	NE	Draize test, rabbit eye: 25 mg/24H Mild
	231-545-4		
Trehalose	6138-23-4	NE	NE
	Unlisted		
Magnesium Nitrate Hexahydrate	13446-18-9	5440 mg/kg (Oral, Rat)	NE
	233-826-7		
SECTION 12 - ECOLOGICAL INFORMATION			
No data is available on the adverse effects of this material on the environment. Neither COD nor BOD data are available. Based on the chemical composition of this product it is assumed that the mixture can be treated in an acclimatized biological waste treatment plant system in limited quantities. However, such treatment should be evaluated and approved for each specific biological system. None of the ingredients in this mixture are classified as a Marine Pollutant.			
SECTION 13 - DISPOSAL CONSIDERATIONS			
WASTE DISPOSAL METHOD: According to the European Waste Catalogue, waste codes are application specific and should be assigned by the user based on the application for which the product is used. Dispose of in accordance with Local, State, and Federal Regulations. Refer to "40 CFR Protection of Environment Parts 260 - 299" for complete waste disposal regulations for corrosive materials. Consult your local, state, or Federal Environmental Protection Agency before disposing of any chemicals.			

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SECTION 14 - TRANSPORT INFORMATION

PROPER SHIPPING NAME: Not regulated for transport.	
DOT HAZARD CLASS / Pack Group: NA REFERENCE: 49 CFR 173.154, .203, .241 UN / NA IDENTIFICATION NUMBER: None LABEL: None HAZARD SYMBOLS: None.	IATA HAZARD CLASS / Pack Group: NA IMDG HAZARD CLASS: NA RID/ADR Dangerous Goods Code: NA UN TDG Class / Pack Group: NA Hazard Identification Number (HIN): NA

Note: Transportation information provided is for reference only. Client is urged to consult CFR 49 parts 100 - 177, IMDG, IATA, EU, United Nations TDG, and WHMIS (Canada) TDG information manuals for detailed regulations and exceptions covering specific container sizes, packaging materials and methods of shipping.

SECTION 15 - REGULATORY INFORMATION

TSCA (USA - Toxic Substance Control Act): All components of this product are listed.

SARA TITLE III (USA - Superfund Amendments and Reauthorization Act):

Acute Health: NO	Chronic Health: NO
Fire: NO	Sudden Release of Pressure: NO
Reactive: NO	

SARA 313 REPORTABLE INGREDIENTS: None

CERCLA (USA - Comprehensive Response Compensation and Liability Act): The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) has notification requirements for releases or spills to the environment in quantities greater than 24,000 pounds, based on the reportable quantities of the individual components, and in agreement with US Code of Federal Regulations 40 CFR 302.

California Prop 65, Safe Drinking Water and Toxic Enforcement Act of 1986: No reportable components.

State Right to Know: **CAS# 7631-86-9 (Amorphous silica)** can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

CPR (Canadian Controlled Products Regulations): This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations. **WHMIS Classification: D2B.**



IDL (Canadian Ingredient Disclosure List): CAS# 110-15-6, 111-42-2 are listed on Canada's Ingredient Disclosure List

DSL / NDSL (Canadian Domestic Substances List / Non-Domestic Substances List): Components of this product identified by CAS number are listed on the DSL or NDSL, or are otherwise in compliance with the New Substances Notification (NSN) regulations.

EINECS (European Inventory of Existing Commercial Chemical Substances): CAS#6138-23-4 (Trehalose) Not Referenced.

WGK Water Quality Index: 1 **VbK Index:** NA

RISK PHRASES: R36/37/38 : Irritating to eyes, respiratory system and skin.	SYMBOL(S) REQUIRED FOR EU, GHS LABELS  Irritant	SAFETY PHRASES: S2 : Keep out of the reach of children. S24/25 : Avoid contact with skin and eyes. S28 : After contact with skin, wash immediately with plenty of soap and water. S46: If swallowed seek medical advice immediately and show this container or label.
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SECTION 16 - OTHER INFORMATION

Legend:

ACGIH - American Congress of Government Industrial Hygienists EINECS - European Inventory of Existing Commercial Chemical Substances IARC - International Agency for Research on Cancer NA - Not Available ND - Not Determined NE - Not Established NR - Not Reported NIOSH - National Institute for Occupational Safety and Health OSHA - Occupational Safety and Health Administration	CAS - Chemical Abstracts Service HMIS- Hazardous Materials Identification System NTP- National Toxicology Program ND- Not Determined NR- Not Reported
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HMIS HAZARD RATINGS	HEALTH: FLAMMABILITY: PHYSICAL HAZARD: PERSONAL PROTECTIVE EQUIPMENT:	1 0 0 B Safety Glasses, Gloves	0 = INSIGNIFICANT 1 = SLIGHT 2 = MODERATE 3 = HIGH 4 = EXTREME
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The information contained herein is believed to be accurate but is not warranted to be so. Data and calculations are based on information furnished by the manufacturer of the product and manufacturers of the components of the product. Users are advised to confirm in advance of need that information is current, applicable and suited to the circumstances of use. Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Furthermore, vendor assumes no responsibility for injury caused by abnormal use of this material even if reasonable safety procedures are followed. Any questions regarding this product should be directed to the manufacturer of the product as described in Section 1.