1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Code	40860
Trade Name	MICROPOSIT MF-322 DEVELOPER
Manufacturer/Supplier	Shipley Company
Address	455 Forest St. Marlborough, Massachusetts 01752
Phone Number	(508) 481-7950
Emergency Phone Number	(508) 481-7950
Chemtrec #	(800) 424-9300
MSDS first issued	8 July 1996
MSDS data revised	10 May 1999
Prepared By:	Gregory S. Dripps
Local Sales Company	Shipley Company, 455 Forest Street, Marlboro, MA 01752 (508-481-7950)

2. COMPOSITION/INFORMATION ON THE INGREDIENTS

Components without CAS numbers are Trade Secret

Component Name	CAS# / Codes	Concentration
water	7732-18-5	97.00 - 98.00
tetramethylammonium hydroxide	75-59-2	2.44
Surfactant		0.01 - 1.00

3. HAZARD IDENTIFICATION

Main Hazards	- Irritant - Skin - Eye - Nervous System - Respiratory System
Routes of Entry	Inhalation, ingestion, eye and skin contact, absorption.
Carcinogenic Status	Not considered carcinogenic by NTP, IARC and OSHA
Target Organs	- Skin - Eye - Nervous System - Respiratory System
Health Effects - Eyes	Liquid, mist or vapor will cause conjunctival irritation and possibly corneal damage. Systemic effects similar to those resulting from skin contact may occur. Effects may be delayed for several hours.
Health Effects - Skin	Material may cause irritation. Repeated or prolonged contact may cause chemical burns. Abnormal conditions such as prolonged contact or absorption through burns or open wounds may have the following effects: - neurotoxicity - muscle spasms - convulsions - death (See Section 11)
Health Effects - Ingestion	Swallowing may have the following effects: - irritation of mouth, throat and digestive tract - systemic effects similar to those resulting from skin contact
Health Effects - Inhalation	Exposure to vapor or mist may have the following effects: - irritation of nose, throat and respiratory tract

4. FIRST AID MEASURES

First Aid - Eyes	Immediately flush the eye with plenty of water for at least 20 minutes, holding the eye open. Obtain medical attention immediately.
First Aid - Skin	Wash skin with water. Remove contaminated clothing as washing proceeds. Continue washing for at least 20 minutes. Obtain medical attention if blistering occurs or redness persists. Obtain medical attention if this product contacted abraided skin or open wounds.
First Aid - Ingestion	Wash out mouth with water. Do not induce vomiting. Obtain medical attention.
First Aid - Inhalation	Remove from exposure. If there is difficulty in breathing, give oxygen. Seek medical attention if symptoms persist.
Advice to Physicians	Treat symptomatically. Support respiration and blood pressure. Control seizures. Effects believed to be reversible if hypoxia and prolonged seizures are prevented.

5. FIRE FIGHTING MEASURES

Extinguishing Media	Use water spray, foam, dry chemical or carbon dioxide.
Special Fire-Fighting Procedures	None.
Unusual Fire & Explosion Hazards	None known.
Protective Equipment for Fire-Fighting	No special fire-fighting clothing required.

6. ACCIDENTAL RELEASE MEASURES

Spill Procedures	Spills may be absorbed with appropriate absorbent material for alkaline materials.
Personal Precautions	Wear appropriate protective clothing.
Environmental Precautions	Prevent the material from entering drains or water courses.

7. HANDLING AND STORAGE

Handling	Use local exhaust ventilation. Avoid contact with eyes, skin and clothing. Keep container tightly closed when not in use.
Storage	Store in original containers. Storage area should be: - cool - dry - well ventilated - away from incompatible materials

Other

No special precautions necessary.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Standards

tetramethylammonium hydroxide	None assigned.
Engineering Control Measures	Engineering methods to prevent or control exposure are preferred. Methods include process or personnel enclosure, mechanical ventilation (local exhaust), and control of process conditions.
Respiratory Protection	Respiratory protection not normally required. Respiratory protection if there is a risk of uncontrolled exposure to vapor The specific respirator selected must be based on the airborne concentration found in the workplace and must not exceed the working limits of the respirator.

Hand Protection	Neoprene or nitrile gloves. Other chemical resistant gloves may be recommended by your safety professional.
Eye Protection	Chemical goggles.
Body Protection	Normal work wear.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Color	Clear
Odor	Amine
VOC (g/l)	Not applicable.
Specific Gravity	1.001
pH	13
Boiling Range/Point (°C/F)	100 / 212
Flash Point (PMCC) (°C/F)	Not applicable.
Explosion Limits (%)	Not applicable.
Solubility in Water	Completely soluble.
Vapor Density (Air = 1)	Data not available.
Evaporation Rate	Slower than ether
Vapor Pressure	Equivalent to water.

10. STABILITY AND REACTIVITY

Stability	Stable under normal conditions.
Conditions to Avoid	- contact with incompatible materials
Incompatibilities	- Acids - Strong oxidizing agents
Hazardous Polymerization	Will not occur.
Hazardous Decomposition Products	- methanol - triethylamine - oxides of nitrogen - oxides of carbon

11. TOXICOLOGICAL INFORMATION

Acute Data	Tetramethylammonium hydroxide: 2.14% (by weight): A single 4h semi-occlusive application to intact rabbit skin produced no signs of dermal irritation. No clinical signs of toxicity were observed during a 48h observation period. Testing complied with OECD Section 404 and EPA TSCA 40 CFR Part 798 standard protocols. DOT Corrosivity testing conducted on stainless steel and laboratory animals determined that this product is not corrosive.
Chronic/Subchronic Data	No relevant studies identified.
Genotoxicity	No relevant studies identified.
Reproductive/Developmental Toxicity	No relevant studies identified.
Additional Data	Tetramethylammonium hydroxide: 3.5% (by weight): A single 4h semi-occlusive application to intact rabbit skin produced minimal signs of irritation (mean scores for erythema or edema less than 2). No clinical signs of toxicity were observed during a 48h observation period. Testing complied with OECD Section 404 and EPA TSCA 40 CFR Part 798 standard protocols. 5% and 7% (by weight): A single 4h semi-occlusive application to intact rabbit skin produced burns (full thickness destruction of skin). This material is corrosive. No clinical signs of toxicity were observed during a 48h observation period. Testing complied with OECD Section 404 and EPA TSCA 40 CFR Part 798 standard protocols. Corrosive to aluminum per DOT corrosivity testing. <5% (w/v): Repeated application to rat skin for 6 h/d, 5 d/wk, for 4 weeks did not produce systemic toxicity. Test material was applied continuously through a reservoir affixed to shaved animal backs. >=5% (w/v): Repeated application to rat skin for 6h/d,5 d/wk, for 4 weeks produced rapid systemic toxicity with the following effects: - convulsions - death Effects were noted after 2 hours of initial application. Test material was applied continuously through a reservoir affixed to shaved animal backs. 100% (by weight): Dermal LD50 (guinea pig) 25mg/kg.

12. ECOLOGICAL INFORMATION

Mobility	The product will dissolve rapidly in water. The product will leach into soil.
Persistence/Degradability	If neutralized, this material may be biodegradable.
Bio-accumulation	If neutralized, this material may be biodegradable.
Ecotoxicity	Do not discharge directly to surface water. Tetramethylammonium hydroxide: A pH neutralized solution has been shown to be toxic to aquatic organisms. Tests on the following species gave a 96h LC50 of 0.07-1.2mg/litre: - ceriodaphnia dubia (water flea)

13. DISPOSAL CONSIDERATIONS

Product Disposal	Do not discharge directly to surface water. Dispose of in accordance with all applicable local and national regulations.
Container Disposal	Labels should not be removed from containers until they have been cleaned. Empty containers may contain hazardous residues. Dispose of containers with care.

14. TRANSPORT INFORMATION

DOT Ground:	Not Regulated
UN Proper Shipping Name	None.
UN Class	None.
UN Number	None.
UN Packaging Group	None.
N.O.S. 1:	Not applicable.
N.O.S. 2:	Not applicable.
Subsidiary Risks	None.
ADR/RID Substance Identification Number	None assigned.

CERCLA RQ	None.
Marine Pollutant	No.

15. REGULATORY INFORMATION

TSCA Listed	All components of this product are listed on the U.S. Toxic Substances Control Act Chemical Inventory (TSCA Inventory) or are exempted from listing because a Low Volume Exemption has been granted in accordance with 40 CFR 723.50. This product is not subject to a Section 5(e) Consent Order or Significant New Use Rule (SNUR).
TSCA Exemptions	
TSCA Sec.12(b) Export Notification	This product does not contain any substances subject to Section 12(b) export notification.
WHMIS Classification	D.2.B
MA Right To Know Law	All components have been checked for inclusion on the Massachusetts Substance List (MSL). Those components present at the de minimus concentration have been identified in the hazardous ingredients section of the MSDS.
California Proposition 65	This product does not contain materials which the State of California has found to cause cancer, birth defects or other reproductive harm.
SARA TITLE III-Section 311/312 Categorization (40 CFR 370)	Immediate health hazard
SARA TITLE III-Section 313 (40 CFR 372)	This product does not contain a chemical which is listed in Section 313 at or above de minimis concentrations.

16. OTHER INFORMATION

NFPA Rating- FIRE	0
NFPA Rating- HEALTH	3
NFPA Rating- REACTIVITY	0
NFPA Rating- SPECIAL	None.
Revisions Highlighted	Composition/Information on the Components Hazard Identification First Aid Measures Hazardous Decomposition Products Toxicological Information NFPA Rating-HEALTH
Abbreviations	CAS#: Chemical Abstract Services Number ACGIH: American Conference of Governmental Industrial Hygienists OSHA: Occupational Safety and Health Administration TLV: Threshold Limit Value PEL: Permissible Exposure Limit STEL: Short Term Exposure Limit NTP: National Toxicology Program IARC: International Agency for Research on Cancer R: Risk S: Safety LD50: Lethal Dose 50% LC50: Lethal Concentration 50% BOD: Biological Oxygen Demand Koc: Soil Organic Carbon Partition Coefficient. TLm: Median Tolerance Limit

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