

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Code 40870
Trade Name MICROPOSIT MF-321 DEVELOPER
Manufacturer/Supplier Shipley Company
Address 455 Forest St.
Marlborough, Massachusetts 01752
Phone Number (508) 481-7950
Emergency Phone Number (508) 481-7950
Chemtec # (800) 424-9300
MSDS first issued 8 July 1996
MSDS data revised 10 May 1999
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(508-481-7950)

2. COMPOSITION/INFORMATION ON THE INGREDIENTS

Components without CAS numbers are Trade Secret

Table with 3 columns: Component Name, CAS# / Codes, Concentration. Rows include water (98.00 - 99.00), Surfactant (0.01 - 1.00), and tetramethylammonium hydroxide (1.91).

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.
Health Effects - Skin Material may cause irritation. Repeated or prolonged contact may cause chemical burns.
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.

4. FIRST AID MEASURES

First Aid - Eyes Immediately flush the eye with plenty of water for at least 20 minutes, holding the eye open.
First Aid - Skin Wash skin with water. Remove contaminated clothing as washing proceeds.
First Aid - Ingestion Wash out mouth with water. Do not induce vomiting.
First Aid - Inhalation Remove from exposure. If there is difficulty in breathing, give oxygen.
Advice to Physicians Treat symptomatically. Support respiration and blood pressure. Control seizures.

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.
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.
Respiratory Protection Respiratory protection not normally required. Respiratory protection if there is a risk of uncontrolled exposure to vapor.

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 carbon - oxides of nitrogen

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

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

Disclaimer

[The data contained herein is based on information that Shipley Company believes to be reliable, but no expressed or implied warranty is made with regard to the accuracy of such data or its suitability for a given situation. Such data relates only to the specific product described and not to such products in combination with any other product and no agent of Shipley Company is authorized to vary any of such data. Shipley Company and its agents disclaim all liability for any action taken or foregone on reliance upon such data.](#)