



Material Safety Data Sheet

1. PRODUCT AND COMPANY IDENTIFICATION

MICROPOSIT™ MF-312 DEVELOPER

Revision date: 01/01/2004

Supplier ROHM AND HAAS ELECTRONIC MATERIALS LLC
A Subsidiary of The Dow Chemical Company
455 FOREST STREET
MARLBOROUGH, MA 01752 United States

For non-emergency information contact: 215-592-3000

For non-emergency information contact: 508-481-7950

Emergency telephone number 1 800 424 9300

Local emergency telephone number 989-636-4400

2. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No.	Concentration
Water	7732-18-5	95.0 - 96.0 %
Tetramethylammonium hydroxide	75-59-2	4.9%

3. HAZARDS IDENTIFICATION

Emergency Overview

Appearance

Form liquid
Colour clear
Odour amines

Hazard Summary**DANGER!**

Corrosive alkaline liquid and vapor causes severe skin and eye burns. Causes respiratory irritation. Onset of symptoms may be delayed. Prolonged, repeated contact, inhalation, ingestion, or absorption through the skin, may cause toxic effects to internal organ systems (liver, kidney, central nervous system).

Potential Health Effects

Primary Routes of Entry: Inhalation, ingestion, eye and skin contact.

Eyes: Will cause severe conjunctival irritation, corneal damage, and may result in loss of vision.

Skin: Material will cause chemical burns.

Absorption through burns or open wounds may have the following effects:

central nervous system depression

Ingestion: Swallowing may have the following effects:

corrosion of mouth, throat and digestive tract

Repeated doses may have the following effects:

central nervous system depression

Inhalation: Inhalation may have the following effects:

severe irritation of nose, throat and respiratory tract

Higher concentrations may have the following effects:

severe irritation to nose, throat and respiratory tract and possibly lung damage

systemic effects similar to those resulting from ingestion

Target Organs: Eye

Respiratory System

Skin

nervous system

Carcinogenicity

Not considered carcinogenic by NTP, IARC, and OSHA

4. FIRST AID MEASURES

Inhalation: Remove from exposure. If there is difficulty in breathing, give oxygen. Immediate medical attention is required

Skin contact: Immediately flush the skin with large quantities of water, preferably under a shower. If skin contact occurs, remove contaminated clothing and wash skin thoroughly. Continue washing for at least 20 minutes. Contaminated clothing should be washed or dry-cleaned before re-use. Immediate medical attention is required

Eye contact: Immediately flush the eye with plenty of water for at least 20 minutes, holding the eye open. Immediate medical attention is required

Ingestion: Do not induce vomiting. Wash out mouth with water. Have victim drink 1-3 glasses of water to dilute stomach contents. Immediate medical attention is required. Never administer anything by mouth if a victim is losing consciousness, is unconscious or is convulsing.

Notes to physician

Treat symptomatically. Treat skin burns conventionally.

5. FIRE-FIGHTING MEASURES

Flash point Nonflammable

Lower explosion limit not applicable

Upper explosion limit not applicable

Suitable extinguishing media: Use water spray, foam, dry chemical or carbon dioxide.

Specific hazards during fire fighting: This product may give rise to hazardous vapors in a fire.
Special protective equipment for fire-fighters: Wear full protective clothing and self-contained breathing apparatus.

Further information: May emit corrosive vapor or mist.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Wear suitable protective clothing.
Wear respiratory protection.
Material can create slippery conditions.

Environmental precautions

Prevent the material from entering drains or water courses.
Do not discharge directly to a water source.
Advise Authorities if spillage has entered watercourse or sewer or has contaminated soil or vegetation.

Methods for cleaning up

Spills may be absorbed with appropriate absorbent material for alkaline materials.
Transfer into suitable containers for recovery or disposal.

7. HANDLING AND STORAGE

Handling

Use local exhaust ventilation. Avoid contact with eyes, skin and clothing. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Avoid breathing vapor. Keep container tightly closed.

Further information on storage conditions: Practice good personal hygiene to prevent accidental exposure.

Storage

Storage conditions: Store in original container. Storage area should be: cool dry well ventilated out of direct sunlight away from incompatible materials

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limit(s)

Exposure limits are listed below, if they exist.

Eye protection: Chemical goggles and face shield.

Hand protection: Neoprene gloves. Other chemical resistant gloves may be recommended by your safety professional. Gauntlet sleeves.

Skin and body protection: rubber or neoprene apron

Respiratory protection: Respiratory protection if there is a risk of exposure to high vapor concentrations. 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.

Engineering 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.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	liquid
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Colour	clear
Odour	amines
pH	13
Boiling point/range	100 °C (212 °F)
Flash point	Nonflammable
Lower explosion limit	not applicable
Upper explosion limit	not applicable
Vapour pressure	Similar to water

Component: **Tetramethylammonium hydroxide**

Vapour pressure	17.5 mmHg at 20 °C
Relative vapour density	no data available
Water solubility	completely soluble
Relative density	1.00
Evaporation rate	Slower than ether
VOC's	not applicable

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Hazardous reactions	Stable under normal conditions.
Conditions to avoid	contact with incompatible materials
Materials to avoid	Strong oxidizing agents acids
Hazardous decomposition products	triethylamine, nitrogen oxides (NOx), oxides of carbon, Methanol,
polymerization	Will not occur.

11. TOXICOLOGICAL INFORMATION

Toxicological information on this product or its components appear in this section when such data is available.

Component: **Tetramethylammonium hydroxide**

Acute dermal toxicity	2.1 %(m) A single 4h semi-occlusive application to intact rabbit skin produced no signs of dermal irritation. No clinical signs of toxicity were observed. Testing complied with OECD 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.
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Component: **Tetramethylammonium hydroxide**

Acute dermal toxicity 3.5 %(m)
 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.
 Testing complied with OECD 404 and EPA TSCA 40 CFR Part 798 standard protocols.

Component: **Tetramethylammonium hydroxide**

Acute dermal toxicity 5 %(m)
 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.
 Testing complied with OECD 404 and EPA TSCA 40 CFR Part 798 standard protocols.
 Corrosive to aluminum per DOT corrosivity testing.

Component: **Tetramethylammonium hydroxide**

Acute dermal toxicity 7 %(m)
 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.
 Testing complied with OECD 404 and EPA TSCA 40 CFR Part 798 standard protocols.
 Corrosive to aluminum per DOT corrosivity testing.

Component: **Tetramethylammonium hydroxide**

Acute dermal toxicity <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.

Component: **Tetramethylammonium hydroxide**

Acute dermal toxicity >=5% (w/v):
 Repeated application to rat skin for 6h/d, 5d/wk for 4 weeks produced rapid toxicity and 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.

Component: **Tetramethylammonium hydroxide**

Acute dermal toxicity LD50 guinea pig 25 mg/kg
 100% (by weight).

12. ECOLOGICAL INFORMATION

Ecotoxicological information on this product or its components appear in this section when such data is available.

Tetramethylammonium hydroxide

Ecotoxicity effects

Toxicity to aquatic invertebrates LC50 ceriodaphnia dubia (water flea) 96 h
0.07 - 1.2 mg/l
A pH neutralized solution has been shown to be toxic to aquatic organisms.

13. DISPOSAL CONSIDERATIONS

Environmental precautions: Prevent the material from entering drains or water courses. Do not discharge directly to a water source. Advise Authorities if spillage has entered watercourse or sewer or has contaminated soil or vegetation.

Disposal

Dispose in accordance with all local, state (provincial), and federal regulations. Under RCRA, it is the responsibility of the product's user to determine at the time of disposal, whether the product meets RCRA criteria for hazardous waste. This is because the product uses, transformations, mixtures, processes, etc. may render the resulting materials hazardous. Do not remove label until container is thoroughly cleaned. Empty containers may contain hazardous residues. This material and its container must be disposed of in a safe way.

14. TRANSPORT INFORMATION

DOT

Proper shipping name	Tetramethylammonium hydroxide solution
UN-No	UN 1835
Class	8
Packing group	II

IMO/IMDG

Proper shipping name	TETRAMETHYLAMMONIUM HYDROXIDE SOLUTION
UN-No	UN 1835
Class	8
Packing group	II

15. REGULATORY INFORMATION

SARA TITLE III: Section 311/312 Categorizations (40CFR370): Immediate (acute) Health Hazard

SARA TITLE III: Section 313 Information (40CFR372)

This product does not contain a chemical which is listed in Section 313 at or above de minimis concentrations.

U.S. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D):

U.S. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)
This product does not contain any substances subject to Section 12(b) export notification.

US. Toxic Substances Control Act (TSCA) All components of this product are in compliance with the inventory listing requirements of the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

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.

16. OTHER INFORMATION

Hazard Rating

	Health	Fire	Reactivity
NFPA	3	0	0

Legend

ACGIH	American Conference of Governmental Industrial Hygienists
BAc	Butyl acetate
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
STEL	Short Term Exposure Limit (STEL):
TLV	Threshold Limit Value
TWA	Time Weighted Average (TWA):
	Bar denotes a revision from prior MSDS.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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