SAFETY DATA SHEET

AZ 300 MIF DEVELOPER

Substance No.: GHSBBG70N4 Revision Date 05/29/2015
Version 4.0 Print Date 05/29/2015

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

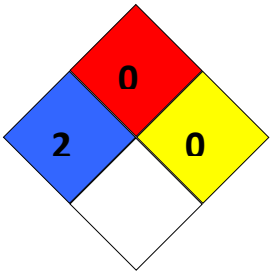
Product name	:	AZ 300 MIF DEVELOPER
Product Use Description	:	Intermediate for electronic industry
Company	:	EMD Performance Materials Corp. An affiliate of Merck KGaA, Darmstadt Germany One International Plaza, Suite 300 Philadelphia, PA 19113
Telephone	:	1-888-367-3275
Emergency telephone number	:	1-800-424-9300 (CHEMTREC)

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

HMIS Classification : Health hazard: 2
Flammability: 0
Reactivity: 0
PPE:X

NFPA Classification : Health hazard: 2
Fire Hazard: 0
Reactivity Hazard: 0
Special Hazards: NONE



GHS Classification

Hazard category, Hazard class	:	Corrosive to metals, Category 1
Hazard category, Hazard class		Acute toxicity, Category 4, Oral
Hazard category, Hazard class		Skin Irritation, Category 2
Hazard category, Hazard class		Eye irritation, Category 2A

GHS-Labelling

Symbol(s) :

Signal word : Warning

Hazard statements : May be corrosive to metals.
Harmful if swallowed.
Causes skin irritation.
Causes serious eye irritation.

Precautionary statements : **Prevention:**
Wash skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Wear protective gloves/ eye protection/ face protection.
Response:
IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF ON SKIN: Wash with plenty of soap and water.
If skin irritation occurs: Get medical advice/ attention.
If eye irritation persists: Get medical advice/ attention.
Take off contaminated clothing and wash before reuse.
Storage:
Store in a dry place. Store in a closed container.
Disposal:
Dispose of contents/ container to an approved waste disposal plant.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous ingredients

Component	CAS-No.	Weight percent
Tetramethylammonium hydroxide	75-59-2	< 3

Non-hazardous ingredients

Component	CAS-No.	Weight percent
Water	7732-18-5	> 95

SECTION 4. FIRST AID MEASURES

First aid procedures

Inhalation	:	If inhaled, remove to fresh air. Keep respiratory tract clear. If breathing is difficult, give oxygen. Get medical attention if irritation develops and persists.
Skin contact	:	Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention if irritation develops and persists. Wash contaminated clothing before reuse.
Eye contact	:	Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Remove contact lenses.
Ingestion	:	Never give anything by mouth to an unconscious person. If person is conscious, give water or milk to dilute stomach contents. Do not induce vomiting. Keep patient at rest and obtain immediate medical assistance

SECTION 5. FIREFIGHTING MEASURES

Flammable properties

Flash point	:	Water-based material with low level of combustible solid content.

Fire fighting

Suitable extinguishing media	:	Product itself is non-combustible; Fire extinguishing method of surrounding areas must be discussed.
Further information	:	The product itself does not burn. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Protective equipment and precautions for firefighters

Special protective equipment for firefighters	:	Well closed full protective clothing (coat and pants) including helmet. Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Environmental precautions	:	Do not allow contact with soil, surface or ground water. Prevent spreading by use of suitable barriers. Local authorities should be advised if significant spillages cannot be contained.
Methods for containment / Methods for cleaning up	:	Wearing appropriate personal protective equipment, contain spill, ventilate area of spill or leak. Collect onto inert absorbent. Place in suitable container.

SECTION 7. HANDLING AND STORAGE

Handling

Handling	:	Use only in area provided with appropriate exhaust ventilation. Wear personal protective equipment. Avoid inhalation of vapour or mist.

Storage

Further information on storage conditions	:	Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from frost, heat and sunlight.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Contains no substances with occupational exposure limit values.

Engineering measures

Engineering measures	:	Handle only in a place equipped with local exhaust (or other appropriate exhaust).

Personal protective equipment

Eye protection	:	Safety eyewear to protect against splashes.
Hand protection	:	Rubber gloves
Skin and body protection	:	Clothing suitable to prevent skin contact.
Respiratory protection	:	Breathing apparatus needed only when aerosol or mist is formed. Use NIOSH approved respiratory protection.
Hygiene measures	:	Observe the usual precautions when handling chemicals.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Physical state	:	liquid
Color	:	clear colourless
Odor	:	odourless

Safety data

Flash point	:	Water-based material with low level of combustible solid content.
Freezing point	:	approx. 32 °F (0 °C)
Boiling point	:	approx. 212 °F (100 °C)
Vapour pressure	:	17.5 Torr at 68 °F (20 °C) Corresp. to vapour pressure of water
Density	:	approx.1 g/cm3
Relative vapour density	:	no data available
Loss on drying	:	> 95 %

SECTION 10. STABILITY AND REACTIVITY

Conditions to avoid	:	Freezing conditions and high temperatures Avoid contact with strong acids. Avoid contact with alkaline materials. Avoid contact with oxidizing agents.
Hazardous decomposition products	:	No hazardous decomposition products known.
Hazardous reactions	:	Hazardous polymerisation does not occur. Note: Stable under normal conditions.

SECTION 11. TOXICOLOGICAL INFORMATION

Data for AZ 300 MIF DEVELOPER

Further information	:	No toxicological testing was carried out on the preparation.

Data for 25% Tetramethylammonium hydroxide solution (75-59-2)

Acute oral toxicity	:	LD50: 136 mg/kg Species: rat
Acute dermal toxicity	:	LD50: 25 mg/kg Species: rat
Acute toxicity (other routes of administration)	:	LDLo: 19 mg/kg Application Route: subcutaneous Species: Mouse
Skin irritation	:	Result: Severe skin irritation Classification: Causes burns.
Eye irritation	:	Result: strongly corrosive Classification: Corrosive
Further information	:	Causes severe burns

SECTION 12. ECOLOGICAL INFORMATION

Data for AZ 300 MIF DEVELOPER

Additional ecological information : No ecological testing was carried out on the preparation.

Data for 25% Tetramethylammonium hydroxide solution (75-59-2)

Ecotoxicity effects

Toxicity to daphnia and other aquatic invertebrates : EC50: 55.6 mg/l
Exposure time: 48 h
Species: Daphnia magna

Toxicity to algae : EC50: > 1,000 mg/l
Exposure time: 72 h
Species: Scenedesmus subspicatus
Method: OECD 201

Elimination information (persistence and degradability)

Biodegradability : Result: rapidly biodegradable
Method: Tested according to Directive 92/69/EEC.

Additional ecological information : Do not allow to enter soil, waterways or waste water

SECTION 13. DISPOSAL CONSIDERATIONS

Further information : Dispose of as special waste in compliance with local and national regulations.
This product would be considered a hazardous waste under RCRA due to high pH unless neutralized prior to disposal.

Contaminated packaging : Empty containers should be taken to local recyclers for disposal.

RCRA hazardous waste : RCRA number: D002
Yes -- If it becomes a waste as sold.

SECTION 14. TRANSPORT INFORMATION

DOT
Not restricted

IATA

UN number	:	1835
Description of the goods	:	Tetramethylammonium hydroxide, solution
Class	:	8
Packing group	:	III
Labels	:	8
Environmentally hazardous	:	no
Additional data for transport	:	PASSENGER AIRCRAFT SHIPMENT OF CONTAINERS >2.5L NOT PERMITTED. CARGO AIRCRAFT ONLY!, CARGO AIRCRAFT SHIPMENT OF CONTAINERS >5L NOT PERMITTED.

IMDG

UN number	:	1835
Description of the goods	:	TETRAMETHYLAMMONIUM HYDROXIDE SOLUTION
Class	:	8
Packing group	:	III
Labels	:	8
EmS Number 1	:	F-A
EmS Number 2	:	S-B
Marine pollutant	:	no
Environmentally hazardous	:	no
Additional data for transport	:	18 - Alkalis

SECTION 15. REGULATORY INFORMATION

Notification status

TSCA : All components of this product are listed on the TSCA Inventory.

DSL : All components of this product are on the Canadian DSL.

WHMIS Classification : E: Corrosive Material

Canadian PBT Chemicals : This product does not contain any components on the DSL that are classified as Persistent, Bioaccumulative and Toxic (PBT) under CEPA.

CERCLA Reportable Quantity :
This material does not contain any components with a CERCLA RQ.

Carcinogenicity

IARC	No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
OSHA	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
NTP	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
ACGIH	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

EPCRA - Emergency Planning and Community Right-to-Know Act

SARA 302 Reportable Quantity	:	This material does not contain any components with a SARA 302 RQ.
SARA 304 Extremely Hazardous Substances	:	This material does not contain any components with a section 304 EHS RQ.

SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Air Act

Ozone-Depletion Potential	:	This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

US. Clean Air Act - Hazardous Air Pollutants (HAP)

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 12 (40 CFR 61).

US. Clean Air Act Section 112(r); Regulated toxic and flammable substances for Accidental Release Prevention - 40 CFR 68.130 (subpart F)

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

US. Clean Air Act Section 111 SOCMI Intermediate or Final Volatile Organic Compunds (VOC) - 40 CFR part 60.489

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489).

Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

US State Regulations

Massachusetts Right To Know Components	:	No components are subject to the Massachusetts Right to Know Act.	
Pennsylvania Right To Know Components	:	Water	7732-18-5
New Jersey Right To Know Components	:	Tetramethylammonium hydroxide	75-59-2
		Water	7732-18-5
California Prop. 65 Components	:	This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.	

SECTION 16. OTHER INFORMATION

The tetramethylammonium ion (TMA), as TMAH in this developer, is toxic at low levels to the water flea ceriodaphnia dubia (CD) used in the whole effluent toxicity (WET) biomonitoring test. Data from the supplier suggests that continuous input of 60-100 ppm TMA to a small POTW should not cause WET toxicity. It is expected that discharges to a sizable POTW will not affect the ability to pass the WET tests. However, discharges to a small POTW or direct discharges to surface waters should be carefully reviewed.

This information is supplied under the OSHA Hazard Communication Standard, 29 CFR 1910.1200, and is offered in good faith based on data available to us that we believe to be true and accurate. For any sub-heading within any section not addressed herein, no relevant information is determined or applicable. The recommended industrial hygiene and safe handling procedures are believed to be generally applicable to the material. However, each user should review these recommendations in the specific context of the intended use and determine whether they are appropriate for that use. No warranty, express or implied, is made regarding the accuracy of this data, the hazards connected with the use of the material, or the results to be obtained from the use thereof. We assume no responsibility for damage or injury from the use of the product described herein. Data provided here are typical and not intended for use as product specifications.

Section 01 - Product Information

Identification of the company:

AZ Electronic Materials USA Corp.
70 Meister Avenue
Somerville, NJ 08876
Telephone No.: 800-515-4164

Information on the substance/preparation
Product Safety: 908-429-3562

Emergency Tel. number: 800-424-9300 CHEMTREC

Trade name: **AZ(R) 300 MIF DEVELOPER**

Material No.: 18441123163

Section 02 - Composition information

Hazardous ingredients:

Chemical Name	CAS-no. (Trade secret no.)	Concentration [%]
Tetramethylammonium hydroxide	75-59-2	1.00 - 3.00

Non-hazardous ingredients:

Chemical Name	CAS-no. (Trade secret no.)	Concentration [%]
Water	7732-18-5	> 95.00

Section 03 - Hazardous identification

Emergency overview: Clear liquid with slight amine odor., Noncombustible., Causes moderate skin irritation., Causes moderate eye irritation., Water soluble.

Expected route of entry
Skin contact: Causes moderate skin irritation.
Ingestion: May be harmful if swallowed.
Inhalation: No hazard in normal industrial use.
Eye contact: Causes moderate eye irritation.
Skin absorption: no

Health effects of exposure:

Component information:

Eye: Causes severe eye irritation. Skin: Causes moderate skin irritation. Toxic by skin absorption. Inhalation: No hazard in normal industrial use. Ingestion: May be harmful if swallowed. Reproductive and birth defects: No information. Systemic effects: No hazard in normal industrial use.

Tetramethylammonium hydroxide (75-59-2)
Tetramethylammonium hydroxide may cause severe irritation or caustic burns to eyes and mucous membranes. TMAH is caustic and corrosive to skin and eyes in concentrated form. Pure TMAH is highly toxic in animal tests by the oral and dermal routes of exposure.

Listed carcinogen: IARC: NO NTP: NO OSHA: NO

HMIS:
Health: 2 Flammability: 0 Reactivity: 0 Personal protection: X

NFPA:
Health: 2 Flammability: 0 Reactivity: 0 Special notice: NONE

Section 04 - First aid measures

After inhalation: Remove victim to fresh air.
Consult physician if irritation occurs.

After contact with skin: Consult physician if exposure is extensive or if irritation occurs.
Immediately remove contaminated clothing and wash affected area thoroughly with soap and water.

After contact with eyes: Flush thoroughly with water for 15 minutes. Get immediate medical help.

After ingestion: If person is conscious, give water or milk to dilute stomach contents.
Never give anything by mouth to an unconscious person.
Consult physician.
Do not induce vomiting.

Advice to doctor / Treatement: A component of this material causes severe acute toxicity in experimental animals by the oral or dermal route of exposure. Exposed individuals should be cafefully observed and treated according to symptoms.

Section 05 - Fire fighting measures

Flash point: Water-based material with low organic content., Compatible with extinguishing agents.

Section 06 - Accidental release measures

Steps to be taken in case of spill or leak: Wearing appropriate personal protective equipment, contain spill, collect onto inert absorbent, and place in a suitable container. Rinse residual with water.

Section 07 - Handling and Storage

Advice on safe handling:

Use only with adequate ventilation and proper protective eyewear, gloves, and clothing.

Further information for storage conditions:

Store at appropriate temperature. See label for details.
Store in original container.
Keep from freezing.

Section 08 - Exposure Control / personal protection

Respiratory protection: Chemical cartridge respirator recommended for exposures exceeding TLV.

Hand protection: Chemical resistant gloves.

Eye protection: Wear safety glasses with side shields, chemical splash goggles, and /or full face shield to prevent contact with eyes.

Body protection: Clothing suitable to prevent skin contact.

Additional advice on system design: Where mist is present, provide local exhaust ventilation or a respirator certified for mist by NIOSH.

Section 09 - Physical and chemical properties

Form: Liquid

Color: Clear, colorless

Odor: Slight amine odor.

pH value: 13.3

Solubility in water: soluble

Density: 1 g/cm3

Boiling point: 100 °C

Loss on drying: 97.6 %

Section 10 - Stability and reactivity

Hazardous reactions: Stable.

Hazardous polymerization: Will not occur.

Conditions to avoid: Avoid contact with strong acids. This product is expected, by test or analogy, to slowly attack aluminum and perhaps other nonferrous metals, releasing hydrogen gas.

Section 11 - Toxiclogical information

Acute oral toxicity: Testing in animals shows that this material is, harmful (rat acute oral LD50 between 500 and 5000mg/kg).

Tetramethylammonium hydroxide (75-59-2)
Acute oral toxicity: LD50 rat
50 mg/kg as chloride salt

Tetramethylammonium hydroxide (75-59-2)
Acute inhalation toxicity No data.

Tetramethylammonium hydroxide (75-59-2)
Acute dermal toxicity: LD50 Guinea pig
25 mg/kg
not determined

Section 12 - Ecological information

Tetramethylammonium hydroxide (75-59-2)
Fish toxicity: LC50
35.1 mg/l

Tetramethylammonium hydroxide (75-59-2)
Toxicity of aquatic invertebrates: EC50
0.21 mg/l

Tetramethylammonium hydroxide (75-59-2)
Algae toxicity : No data available.

Section 13 - Disposal considerations

Product: Consult local, state, and federal regulations.
This product would be considered a hazardous waste under RCRA due to high pH unless neutralized prior to disposal.

Section 14 - Transport information

Land transport

- *DOT:*

Not restricted

Sea transport

- *IMDG:*

UN-No:	1835
Proper technical name:	Tetramethylammonium hydroxide solution
Class:	8
Packaging group:	III
Marine pollutant:	
EmS:	F-A, S-B
MFAG:	
Labels:	8

Air transport

- *ICAO/IATA-DGR:*

UN/ID No.:	UN 1835
Proper technical name:	Tetramethylammonium hydroxide solution
Class:	8
Packaging group:	III
Labels:	8

Section 15 - Regulatory information

TSCA Status: All components of this product are listed on the TSCA Inventory.

SARA (section 311/312): Reactive hazard: no
Pressure hazard: no
Fire hazard: no
Immediate/acute: yes
Delayed/chronic: no

SARA 313 information: This product is not subject to SARA Title III Section 313 reporting requirements under 40 CFR 372.

Section 16 - Other information

Further information

The tetramethylammonium ion (TMA), as TMAH, in this developer is toxic at low levels to the water flea ceriodaphnia dubia (CD) used in the whole effluent toxicity (WET) biomonitoring test. Data from the supplier suggests that continuous input of 60-100 ppm TMA to a small POTW should not cause WET toxicity. It is expected that discharges to a sizable POTW will not affect the ability to pass the WET tests. However, discharges to a small POTW or direct discharges to surface waters should be carefully reviewed. Contact AZ Electronic Materials Product Safety for additional information (908-429-3593 or 908-429-3562).

Label information

DANGER!

Alkaline solution. Contains material that may be highly toxic. May cause severe skin and eye irritation. May cause corneal damage. Dry or concentrated residue may be corrosive.

Avoid breathing mist, and avoid contact with skin, eyes, and clothing. Use only with adequate ventilation, and proper protective eyewear, gloves, and clothing. Wash thoroughly after handling. Keep container closed.

In case of contact, flush eyes with plenty of water for 15 minutes. Get medical attention immediately. Flush affected skin areas with water, and wash with mild soap and water. Remove contaminated clothing. If INHALED, remove individual to fresh air. If breathing is difficult, give oxygen. If ingested, give water or milk to dilute stomach contents. Do not induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention immediately for ingestion or breathing problems or if skin contact is extensive.

If spilled, wear protective clothing, absorb with inert material, collect and place in a chemical waste container. Rinse residue with water.

Keep sealed in original container. Avoid freezing and direct sunlight. Product should be stored > 32 F (0 C). Empty container may contain harmful residue.

The solvent in this product is not photochemically reactive per Rule 102 of the California South Coast Air Quality Management District.
