SAFETY DATA SHEET

AZ 300 MIF Developer

SECTION 1. IDENTIFICATION

Product identifier
Product name : AZ 300 MIF Developer

Product number : 184411

Recommended use of the chemical and restrictions on use
Recommended use : Intermediate for electronic industry

Details of the supplier of the safety data sheet

Emergency telephone : 1-800-424-9300 CHEMTREC (USA)
1-703-741-5970 CHEMTREC (International)
24 Hours/day; 7 Days/week

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification
Corrosive to Metals : Category 1
Acute toxicity (Oral) : Category 4
Acute toxicity (Dermal) : Category 3
Skin corrosion : Category 1C
Serious eye damage : Category 1
Specific target organ toxicity - single exposure : Category 1 (Central nervous system)
Specific target organ toxicity - repeated exposure : Category 1 (Liver, thymus gland)
GHS label elements
Hazard pictograms :  

Signal Word : Danger

Hazard Statements : H290 May be corrosive to metals.
H302 Harmful if swallowed.
H311 Toxic in contact with skin.
H314 Causes severe skin burns and eye damage.
H370 Causes damage to organs (Central nervous system).
H372 Causes damage to organs (Liver, thymus gland) through prolonged or repeated exposure.

Precautionary Statements : Prevention:
P234 Keep only in original container.
P260 Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:
P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. Rinse mouth.
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
P307 + P311 IF exposed: Call a POISON CENTER or doctor/ physician.
P362 Take off contaminated clothing and wash before reuse.
P390 Absorb spillage to prevent material damage.
Storage:
P405 Store locked up.
P406 Store in corrosive resistant container with a resistant inner liner.

Disposal:
P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards
None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Substance / Mixture</th>
<th>Chemical name</th>
<th>Concentration (% w/w)</th>
<th>CAS-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixture</td>
<td>Tetramethylammonium hydroxide</td>
<td>&gt;= 1 - &lt; 5</td>
<td>75-59-2</td>
</tr>
</tbody>
</table>

SECTION 4. FIRST AID MEASURES

General advice: First aider needs to protect himself. TMAH is a severe Neurotoxin causing Ganglion Blockage. Rapid and vigorous decontamination followed by prompt medical respiratory support is needed for anyone that has experienced significant exposure. While the extent of the effects depend upon the exposure concentration, exposure duration and body area contacted; failure to provide prompt medical intervention in cases of significant exposure may result in fatality.

If inhaled: fresh air. Call in physician.

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately.

In case of eye contact: Rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.

If swallowed: make victim drink water (two glasses at most), avoid vomiting (risk of perforation!). Call a physician immediately.
SAFETY DATA SHEET

AZ 300 MIF Developer

Version 5.2   Revision Date: 15.12.2020   SDS Number: 70MDGM184411

Do not attempt to neutralize.

Most important symptoms and effects, both acute and delayed:
- Irritation and corrosion
- Cough
- Shortness of breath
- Risk of blindness!

Notes to physician: No information available.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media: Product is compatible with standard fire-fighting agents.

Unsuitable extinguishing media: For this substance/mixture no limitations of extinguishing agents are given.

Specific hazards during fire fighting: Not combustible.

Further information:
- Suppress (knock down) gases/vapors/mists with a water spray jet.
- Prevent fire extinguishing water from contaminating surface water or the ground water system.

Special protective equipment for fire-fighters: Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:
- Advice for non-emergency personnel:
  - Do not breathe vapors, aerosols.
  - Avoid substance contact.
  - Ensure adequate ventilation.
  - Evacuate the danger area, observe emergency procedures, consult an expert.
- Advice for emergency responders:
  - Protective equipment see section 8.
  - Indications about waste treatment see section 13.

Environmental precautions: Do not flush into surface water or sanitary sewer system.

Methods and materials for containment and cleaning up:
- Cover drains. Collect, bind, and pump off spills.
- Observe possible material restrictions (see sections 7 and 10).
- Take up carefully with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.
SECTION 7. HANDLING AND STORAGE

Precautions for safe handling
Advice on safe handling : Observe label precautions.

Conditions for safe storage, including any incompatibilities
Conditions for safe storage : No metal containers.
Storage conditions : Risks from decomposition products: see section 10

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Contains no substances with occupational exposure limit values.

Hazardous components without workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetramethylammonium hydroxide</td>
<td>75-59-2</td>
</tr>
</tbody>
</table>

Engineering measures : Technical measures and appropriate working operations should be given priority over the use of personal protective equipment. See section 7.

Personal protective equipment
Respiratory protection : required when vapors/aerosols are generated.
Hand protection  
  Additional Protection : Chemically resistant gloves
Protective measures : Protective clothing
Eye protection : Tightly fitting safety goggles
Hygiene measures : Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state : liquid
<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form</td>
<td>liquid</td>
</tr>
<tr>
<td>Color</td>
<td>colorless</td>
</tr>
<tr>
<td>Odor</td>
<td>slight characteristic</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>No information available.</td>
</tr>
<tr>
<td>pH</td>
<td>ca. 13 at 68 °F (20 °C)</td>
</tr>
<tr>
<td>Melting point</td>
<td>No information available.</td>
</tr>
<tr>
<td>Boiling point/boiling range</td>
<td>ca. 212 °F (100 °C) at 1,013 hPa</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>No information available.</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No information available.</td>
</tr>
<tr>
<td>Lower explosion limit</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Upper explosion limit</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>ca. 23 mbar at 68 °F (20 °C)</td>
</tr>
<tr>
<td>Relative vapor density</td>
<td>No information available.</td>
</tr>
<tr>
<td>Density</td>
<td>ca. 1 g/cm³ at 68 °F (20 °C)</td>
</tr>
<tr>
<td>Relative density</td>
<td>No information available.</td>
</tr>
<tr>
<td>Water solubility</td>
<td>soluble</td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>No information available.</td>
</tr>
<tr>
<td>Autoignition temperature</td>
<td>No information available.</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No information available.</td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
<td>ca. 1 mPas at 68 °F (20 °C)</td>
</tr>
</tbody>
</table>
Explosive properties  Not classified as explosive.

Oxidizing properties  none

Ignition temperature  Not applicable

Corrosion  Corrosive to metals

SECTION 10. STABILITY AND REACTIVITY

Reactivity  :  See below

Chemical stability  :  The product is chemically stable under standard ambient conditions (room temperature).

Possibility of hazardous reactions  :  Violent reactions possible with: The generally known reaction partners of water.

Conditions to avoid  :  no information available

Incompatible materials  :  Metals

Hazardous decomposition products  :  in the event of fire: See section 5.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on toxicological effects

Product

Carcinogenicity
IARC  No ingredient 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 on OSHA’s list of regulated carcinogens.

NTP  No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Likely route of exposure
Inhalation, Eye contact, Skin contact
Acute oral toxicity
Acute toxicity estimate: 315.03 mg/kg
Calculation method

Acute dermal toxicity
LD50 Rat: 449 mg/kg
OECD Test Guideline 402
(in analogy to similar compounds)

Skin irritation
Rabbit
Result: Corrosive, category 1C - where responses occur after exposures between 1 hour and 4 hours and observations up to 14 days.
OECD Test Guideline 404
(ECHA)

Experience with human exposure
Other Relevant Toxicity Information:
Causes burns., Harmful if swallowed.

Components

Tetramethylammonium hydroxide (75-59-2):

Acute oral toxicity
LD50 Rat: 7.5 mg/kg
OECD Test Guideline 423(ECHA)

Acute dermal toxicity
LD50 Rat: 13 mg/kg (ECHA) Based on human experience.

Skin irritation
Result: Causes burns.
(ECHA)

Eye irritation
Result: Irreversible effects on the eye
(ECHA)

Repeated dose toxicity
Rat
female
Dermal
28 d
daily
NOAEL: 2.5 mg/kg
Local effects, (ECHA)
Rat
SAFETY DATA SHEET

AZ 300 MIF Developer

Version 5.2  Revision Date: 15.12.2020  SDS Number: 70MDGM184411

male and female
Dermal
28 d
daily
NOAEL: 10 mg/kg
Systemic effects, (ECHA)

Rat
male
Oral
28 d
NOAEL: 5 mg/kg
OECD Test Guideline 407
(ECHA)

Germ cell mutagenicity
Genotoxicity in vitro
Ames test
Result: negative
Method: Mutagenicity (Escherichia coli - reverse mutation assay)
(ECHA)

Chromosome aberration test in vitro
Chinese hamster lung cells
Result: negative
Method: OECD Test Guideline 473
(ECHA)
STOT single exposure
Target Organs: Central nervous system
Assessment: The substance or mixture is classified as specific target organ toxicant, single exposure, category 1.
Remarks: (ECHA)

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity
Product
Toxicity to daphnia and other aquatic invertebrates
EC50 Daphnia magna (Water flea): 12 mg/l; 48 h
OECD Test Guideline 202 (in analogy to similar compounds)

Toxicity to algae
EC50 Desmodesmus subspicatus (green algae): > 1,000 mg/l; 72 h
OECD Test Guideline 201 (in analogy to similar compounds)

Persistence and degradability
No information available.

Bioaccumulative potential
No information available.

Mobility in soil
No information available.
Additional ecological information
Discharge into the environment must be avoided.

Components

*Tetramethylammonium hydroxide (75-59-2):*

*Toxicity to fish*
LC50 Pimephales promelas (fathead minnow): > 100 mg/l; 96 h
OECD Test Guideline 203 (ECHA) (in analogy to similar compounds)

*Toxicity to daphnia and other aquatic invertebrates*
EC50 Daphnia magna (Water flea): 3 mg/l; 48 h
OECD Test Guideline 202 (ECHA)

*Toxicity to algae*
EC50 Pseudokirchneriella subcapitata (green algae): 96.3 mg/l; 72 h
OECD Test Guideline 201 (ECHA)

*Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)*
NOEC Daphnia magna (Water flea): 0.025 mg/l; 48 h
OECD Test Guideline 202 (ECHA)

*Biodegradability*
100 %; 28 d
OECD Test Guideline 301B (ECHA)
Readily biodegradable.

*Partition coefficient: n-octanol/water*
log Pow: -1.4 (20 °C)
OECD Test Guideline 107
Bioaccumulation is not expected.

*Bioaccumulation*
(Bioaccumulation is unlikely.)

SECTION 13. DISPOSAL CONSIDERATIONS

Product Waste: Waste material must be disposed of in accordance with national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself. See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14. TRANSPORT INFORMATION
DOT / 49CFR
UN/ID/NA number : UN 1835
Proper shipping name : Tetramethylammonium hydroxide solution

Class : 8
Packing group : III
Labels : CORROSIVE
ERG Code : 153
Marine pollutant : no
Remarks : LTD QTY =< 5 L or 5 KG net capacity, as per 49 CFR 173.154

International Regulations

IATA-DGR
UN/ID No. : UN 1835
Proper shipping name : Tetramethylammonium hydroxide, solution
Class : 8
Packing group : III
Labels : Corrosive
Packing instruction (cargo aircraft) : 856
Packing instruction (passenger aircraft) : 852

IMDG-Code
UN number : UN 1835
Proper shipping name : TETRAMETHYLAMMONIUM HYDROXIDE SOLUTION

Class : 8
Packing group : III
Labels : 8
EmS Code : F-A, S-B
Marine pollutant : no
Remarks : Ammonium compounds, Alkalis

Special precautions for user
Not applicable

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know

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

SARA 304 Extremely Hazardous Substances Reportable Quantity
This material does not contain any components with a section 304 EHS RQ.
SARA 302
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

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
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).
This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).
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).
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.
This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

US State Regulations

Massachusetts Right To Know
No components are subject to the Massachusetts Right to Know Act.

New Jersey Right To Know
Tetramethylammonium hydroxide 75-59-2

California Prop. 65
This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

The ingredients of this product are reported in the following inventories:

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

TSCA : All substances listed on the TSCA Active Inventory.

SECTION 16. OTHER INFORMATION
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.