

# MATERIAL SAFETY DATA SHEET

## SECTION 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**MANUFACTURER/SUPPLIER NAME:** Clariant Corporation, AZ Electronic Materials

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Product Safety  
Information:  
(908) 429-3593

Customer  
Service: (800)  
515-4164

**PRODUCT NAME:** **AZ(R) 400T PHOTORESIST STRIPPER**

**SYNONYMS:** None

**MSDS NO.** 70Q6

**REVISION DATE:** 10/16/2000

**DATE PRINTED:** 11/01/2000

## SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS

<u>Chemical Name &amp; CAS Number</u>	<u>Weight Percent</u>	<u>Hazardous?</u>	<u>NJ Trade Secret #</u>	<u>Ingredient Synonyms</u>	<u>Other Information:</u>
1-Methyl-2-pyrrolidinone 000872-50-4	74	Yes	N/A	1-Methyl-2-pyrrolidone, N-methylpyrrolidone, NMP	PA RTK List.
1,2-Propanediol 000057-55-6	24	Yes	NA	Propylene glycol	PA RTK List.
Tetramethylammonium hydroxide 000075-59-2	2	Yes	No	TMAH	None

## **SECTION 3. HAZARDS IDENTIFICATION**

### **EMERGENCY OVERVIEW:**

Clear, colorless liquid. Characteristic odor. Water soluble. Causes skin and eye irritation. May produce systemic or organ effects with repeated or excessive exposure. Contains an ingredient that is highly toxic by ingestion and skin absorption.

### **POTENTIAL HEALTH EFFECTS:**

#### **Relevant Routes of Exposure:**

Skin absorption. Eye contact with liquid and vapors. Inhalation of mist.

#### **Medical Conditions Aggravated:**

Preexisting skin, eye, and respiratory conditions may be aggravated.

**1-Methyl-2-pyrrolidinone, NMP** is an eye irritant. It is fetotoxic and produces fetal skeletal abnormalities at high doses. Skin contact can lead to dermatitis. NMP has shown nervous system depression, bone marrow and lymph tissue effects. Some tests in rats have shown testicular effects. It was positive in chromosome aberration testing.

**1,2-Propanediol** is a skin and eye irritant. It has been reported to cause central nervous system depression when administered orally and has been reported to be an in-vitro mutagen. Most mutagenicity tests with propylene glycol have indicated that it is not mutagenic. However, in one in vitro test, it was found to be mutagenic, at one dose level.

**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.

DOT four hour rabbit skin test of the highest commercial concentration of this product was negative for corrosion.

## **SECTION 4. FIRST AID MEASURES**

### **FIRST AID PROCEDURES:**

#### **Inhalation:**

Remove victim to fresh air. Consult physician if irritation occurs.

#### **Eye Contact:**

Flush thoroughly with water for 15 minutes. Get immediate medical help.

#### **Skin Contact:**

Immediately remove contaminated clothing and wash affected area thoroughly with water until greasy feel is gone. Consult physician if exposure is extensive or if irritation occurs.

#### **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.

**NOTE TO PHYSICIANS:**

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

**SECTION 5. FIRE FIGHTING MEASURES****Flash point:**

> 200 deg F, Closed Cup

**Extinguishing Media:**

Carbon dioxide, water, alcohol foam, dry chemical.

**Special Procedures:**

Use self-contained breathing apparatus and full protective clothing. Use water spray to cool drums in fire area.

**Unusual hazards:**

Solvent vapors. Emits toxic and corrosive fumes under fire conditions.

**SECTION 6. ACCIDENTAL RELEASE MEASURES****Spill or Leak Procedures:**

Wearing appropriate personal protective equipment, contain spill, collect onto inert absorbent, and place in a suitable container. Rinse residual with water.

**SECTION 7. HANDLING AND STORAGE****Handling:**

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

**Storage:**

Store at appropriate temperature. See label for details. Store in original container. Transport and store under dry conditions tightly closed.

**SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION****Engineering Controls:**

Where mist is present, provide local exhaust ventilation or a respirator certified for mist by NIOSH.

**Personal Protective Equipment (PPE):**

Clothing suitable to prevent skin contact. Rubber gloves. Chemical cartridge respirator recommended for exposures exceeding TLV. Safety eyewear to protect against splashes.

### Exposure Guidelines:

<u>Chemical Name &amp; CAS Number</u>	<u>Weight Percent</u>	<u>Manufacturer's TWA TLV*</u>	<u>ACGIH TWA TLV*</u>	<u>OSHA PEL*</u>	<u>NIOSH REL*</u>	<u>AIHA WEEL*</u>
1-Methyl-2-pyrrolidinone 000872-50-4	74	5 ppm ***				
1,2-Propanediol 000057-55-6	24					
Tetramethylammonium hydroxide 000075-59-2	2					

\*TWA TLV = Time Weighted Average Threshold Limit Value

ACGIH = American Conference of Governmental Industrial Hygienists

OSHA PEL = Occupational Safety and Health Administration Permissible Exposure Limit

NIOSH REL = National Institute of Occupational Safety and Health Recommended Exposure Limit

AIHA WEEL = American Industrial Hygiene Association Workplace Environmental Exposure Level

\*\*Skin Notation

\*\*\*Hoechst Celanese Workplace Exposure Level (HCC WEL); included is a "no contact" recommendation for NMP due to its skin absorption properties.

## **SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

**Appearance:** Clear, colorless liquid.

**Odor:** Characteristic odor.

**Physical State:** Liquid

**Vapor Pressure** 0.2 torr (calculated)

**Vapor Density:** >1

**Solubility in water:** Soluble.

**Specific gravity:** 1.035

**VOC:** 1000 g/L calculated

**Evaporation rate**

**(butyl acetate=1):** < butyl acetate

**% Volatile:** 98%

## **SECTION 10. STABILITY AND REACTIVITY**

**Chemical Stability:**

Stable.

**Hazardous Polymerization:**

Will not occur.

**Conditions to Avoid:**

Avoid contact with oxidizing agents. Avoid contact with strong acids.

**Hazardous Decomposition Products:**

Thermal decomposition may generate carbon dioxide, carbon monoxide, and oxides of nitrogen. If heated to dryness, TMAH may decompose to trimethylamine and methanol. TMAH reportedly decomposes in boiling water, rate unknown.

**SECTION 11. TOXICOLOGICAL INFORMATION**

**Carcinogen:**

IARC: NO NTP: NO OSHA: NO

**Ingredient Toxicity Data:**

<u>Chemical Name &amp; CAS Number</u>	<u>Weight Percent</u>	<u>oral rat LD50</u>	<u>skin rbt LD50</u>	<u>inh rat LC50</u>
1-Methyl-2-pyrrolidinone 000872-50-4	74	3.9 g/kg	8.0 g/kg	>370 ppm/6hr
1,2-Propanediol 000057-55-6	24			
Tetramethylammonium hydroxide 000075-59-2	2	50 mg/kg as TMAH chloride salt	25 mg/kg (g pig)	

**TOXICITY HAZARD STATEMENTS FOR PRODUCT:**

**Eye Effects:**

Testing in rabbits of a more concentrated form of this product showed it was a moderate eye irritant.

**Skin Effects:**

Testing in rabbits of a more concentrated form of this product showed it was a mild skin irritant. D.O.T. four hour rabbit skin test of the highest commercial concentration of this product was negative for skin corrosion.

**SECTION 12. ECOLOGICAL INFORMATION**

**Ingredient Ecological Toxicity Data:**

<u>Weight Percent</u>	<u>Fish LC50</u>	<u>Daphnia EC50</u>	<u>Algae IC50</u>
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**Chemical Name & CAS Number**

1-Methyl-2-pyrrolidinone 74

000872-50-4

1,2-Propanediol 24

000057-55-6

Tetramethylammonium hydroxide 2 35.1 mg/l (as chloride) 0.21 mg/l (as chloride)

000075-59-2

**Environmental hazard information statements (using EU classification criteria):**

**Toxicity to fish:**

A more concentrated form of this product was non-toxic to fathead minnow at up to 1.017 grams per liter.

**Environmental Fate:**

The ingredients of this product are known to be biodegradable.

**SECTION 13. DISPOSAL CONSIDERATIONS**

**Disposal:**

Dispose of or incinerate in accordance with regulations. Product would be considered a hazardous waste under RCRA due to high pH unless neutralized prior to disposal. See special precautions.

**SECTION 14. TRANSPORT INFORMATION**

**DOT/IATA Shipper Entry:**

Corrosive liquid, basic, organic, n.o.s. (tetramethylammonium hydroxide), 8, UN3267, III.

**SECTION 15. REGULATORY INFORMATION**

**TSCA Inventory Status:**

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

**SARA Title III section 313:**

This product contains the chemical or chemicals listed below which are subject to the supplier notification requirements of Section 313 of the Superfund Amendments and Reauthorization Act of 1986 ("SARA") and the requirements of 40 CFR Part 372:

SARA Ingredient: 1-Methyl-2-pyrrolidone; CAS# 872-50-4; 41%.

**OSHA Health Hazards:**

Eye Hazard. Irritant. Skin Hazard. Nervous System Toxin. Reproductive Toxin. Blood Toxin. Highly Toxic.

**SARA (311, 312) Hazard Class(es):**

Acute health hazard. Fire hazard. Chronic health hazard.

**Other Federal Regulations:**

Toxic Substance Control Act (TSCA) Section 12(B) Export Notification Requirement for 1-Methyl-2-Pyrrolidinone.

**SECTION 16. OTHER INFORMATION****HMIS Ratings:**

Health = 2; Flammability = 1; Reactivity = 0; PPE=X \*

**NFPA Ratings:**

Health = 2; Flammability = 1; Reactivity = 0; Special Hazard = None.

**Special Precautions:**

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).

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