



SAFETY DATA SHEET
AZ MiR 701 Photoresist (29 CPS)

Substance No.: BBG706M
Version 6.0

Revision Date 05/21/2015
Print Date 12/29/2015

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : AZ MiR 701 Photoresist (29 CPS)

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

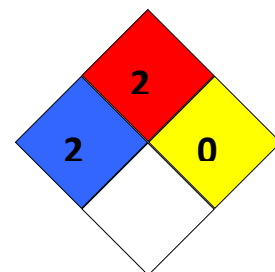
Emergency telephone number : 1-800-424-9300 (CHEMTREC)

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

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

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



GHS Classification

Hazard category, Hazard class : Flammable liquids, Category 3

Hazard category, Hazard class : Skin Irritation, Category 2



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plant.

Special labelling of certain mixtures :

The following percentage of the mixture consists of ingredient(s) with unknown acute toxicity: 20 %

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous ingredients

Component	CAS-No.	Weight percent
Ethyl lactate	97-64-3	60 - 65
n-Butyl acetate	123-86-4	10 - 15
Diazonaphthoquinonesulfonic ester	67829000004-5755P	5 - 10

Non-hazardous ingredients

Component	CAS-No.	Weight percent
Cresol novolak resin	27029-76-1	15 - 20
Phenolic polyol	67829000004-5521P	< 4

SECTION 4. FIRST AID MEASURES

First aid procedures

- Inhalation : If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If symptoms persist, call a physician.
- 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.
- Eye contact : Remove contact lenses. Flush eyes with water at least 15 minutes. Get medical attention if eye irritation develops or persists.
- Ingestion : Keep respiratory tract clear. If conscious, drink plenty of water. Never give anything by mouth to an unconscious person.



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Obtain medical attention.

SECTION 5. FIREFIGHTING MEASURES

Flammable properties

Flash point : 118 °F (48 °C)
Method: closed cup

Fire fighting

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

Further information : In the event of fire, wear self-contained breathing apparatus.
Use personal protective equipment.
Cool containers/tanks with water spray.

Protective equipment and precautions for firefighters

Specific hazards during firefighting : As the product contains combustible organic components, fire will produce dense black smoke containing hazardous products of combustion (see section 10).

SECTION 6. ACCIDENTAL RELEASE MEASURES

Environmental precautions : Do not allow entry to drains, water courses or soil
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, remove all sparking devices or ignition sources, collect onto inert absorbent, and place in a suitable container.

SECTION 7. HANDLING AND STORAGE

Handling

Handling : Do not breathe vapours or spray mist.



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Do not get on skin or clothing.
For personal protection see section 8.
Use only in area provided with appropriate exhaust ventilation.

Advice on protection against fire and explosion : Keep away from heat and sources of ignition.
Take measures to prevent the build up of electrostatic charge.
Avoid shock and friction.

Storage

Further information on storage conditions : Keep container tightly closed in a dry and well-ventilated place.
May liberate combustible solvent vapors.
Store at appropriate temperature. See label for details.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Components with workplace control parameters

Components	CAS-No.	Control parameters	Basis
n-Butyl acetate	123-86-4	TWA: 150 ppm	ACGIH
		STEL: 200 ppm	
		TWA: 150 ppm (710 mg/m3)	OSHA Z-1
		TWA: 150 ppm (710 mg/m3)	OSHA P0
		STEL: 200 ppm (950 mg/m3)	
		TWA: 150 ppm (710 mg/m3)	NIOSH REL
		ST: 200 ppm (950 mg/m3)	

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 : Solvent-resistant gloves

Skin and body protection : Clothing suitable to prevent skin contact.



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- Respiratory protection : In the case of vapour formation use a respirator with an approved filter.
Respirator with filter for organic vapour
Use NIOSH approved respiratory protection.
- Hygiene measures : Observe the usual precautions when handling chemicals.
-

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

- Form : liquid
Color : Clear, amber-red
- Odor : strong ester-like
Somewhat sweet.

Safety data

- Flash point : 118 °F (48 °C)
Method: closed cup
- Starts to boil : 311 °F (155 °C)
- Vapour pressure : app. 4 Torr
at 68 °F (20 °C)
- Density : 1.065 g/cm³
- Water solubility : The solvent is partially water soluble but the product forms two layers.
- VOC : 788 g/l (Calculated value)
- Loss on drying : <= 75 %
-

SECTION 10. STABILITY AND REACTIVITY

- Conditions to avoid : Avoid contact with oxidizing agents.
Avoid contact with strong acids.
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Avoid contact with alkaline materials.

- Hazardous decomposition products : Thermal decomposition may generate carbon dioxide, carbon monoxide, and oxides of nitrogen and sulfur.
- Hazardous reactions : Hazardous polymerisation does not occur.
- Chemical stability : Stable under normal conditions.

SECTION 11. TOXICOLOGICAL INFORMATION

Data for AZ MiR 701 Photoresist (29 CPS)

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

Data for ETHYL (S) LACTATE (687-47-8)

- Acute oral toxicity : LD50 Oral: 2,500 mg/kg
Species: mouse
Source : HSDB
- Acute inhalation toxicity : LC50: > 5.4 mg/l
> 5400 mg/m3
Exposure time: 8 h
Species: rat
- Acute dermal toxicity : LD50 Dermal: > 5,000 mg/kg
Species: rabbit
Source : HSDB
- Skin irritation : Species: guinea pig
Result: Irritating to skin.
Method: Intradermal injection.
Source : HSDB
- Eye irritation : Species: rabbit
Result: Severe eye irritation



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Classification: Risk of serious damage to eyes.
Source : Supplier MSDS

Repeated dose toxicity : Species: Rats
Application Route: Inhalation
Exposure time: (28 d)
Number of exposures: Daily
NOEL: 0.6 mg/l

Data for n-Butyl acetate (123-86-4)

Acute oral toxicity : LD50 Oral: 12,760 mg/kg
Species: rat
Source : OECD SIDS

: LD50 Oral: 10,736 mg/kg
Species: rat
Source : OECD SIDS

Acute inhalation toxicity : LC50: > 8000 ppm
Exposure time: 6 h
Species: rat
Source : OECD SIDS

Acute dermal toxicity : LD50 Dermal: > 14,080 mg/kg
Species: rabbit
Source : OECD SIDS

Skin irritation : Species: rabbit
Result: No skin irritation
Source : OECD SIDS

Eye irritation : Species: rabbit
Result: No eye irritation
Method: Draize Test
Source : OECD SIDS

Sensitisation : Guinea pig maximization test
Species: guinea pig



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Classification: not sensitizing
Result: non-sensitizing
Source : OECD SIDS

Data for Diazonaphthoquinonesulfonic esters (67829000004-5546P)

Acute oral toxicity : LD50 Oral: > 5,000 mg/kg
Species: rat
By analogy with a similar product.

Skin irritation : Species: rabbit
Result: No skin irritation

Eye irritation : Species: rabbit
Result: slight irritant effect - does not require labelling
Classification: not irritating

SECTION 12. ECOLOGICAL INFORMATION

Data for AZ MiR 701 Photoresist (29 CPS)

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

Data for ETHYL (S) LACTATE (687-47-8)

Ecotoxicity effects

Toxicity to fish : LC50: 320 mg/l Exposure time: 48 h
Species: Fish
Source : Supplier MSDS

Toxicity to daphnia and other aquatic invertebrates : EC50: 683 mg/l
Exposure time: 48 h
Species: Daphnia magna
Source : Supplier MSDS

Toxicity to algae : EC50: 2,200 mg/l



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Species: Selenastrum sp.
Source : Supplier MSDS

Elimination information (persistence and degradability)

Bioaccumulation : Bioaccumulation is unlikely.

Biodegradability : Readily biodegradable, according to appropriate OECD test.
Source : Supplier MSDS

Data for n-Butyl acetate (123-86-4)

Ecotoxicity effects

Toxicity to fish : LC50: 18 mg/l Exposure time: 96 h

Species: Pimephales promelas (fathead minnow)
flow-through test Source : OECD SIDS

: LC50: 100 mg/l Exposure time: 96 h

Species: Lepomis macrochirus (Bluegill sunfish)
Source : JP MoE, Environmental Risk Assessment of
Chemicals

Toxicity to daphnia and other aquatic invertebrates : EC50: 32 mg/l
Exposure time: 48 h
Species: Artemia salina
static test Analytical monitoring: no
Source : OECD SIDS

Toxicity to algae : EC50: 674.7 mg/l
Exposure time: 72 h
Species: Scenedesmus subspicatus
Source : OECD SIDS

Toxicity to bacteria : EC50: 959 mg/l
Exposure time: 18 h
Species: Pseudomonas putida



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aquatic
Method: DIN 38412 T.8
Source : OECD SIDS

Elimination information (persistence and degradability)

Biodegradability : Result: Readily biodegradable.
98 %
Source : IUCLID

Data for Diazonaphthoquinonesulfonic esters (67829000004-5546P)

Ecotoxicity effects

Toxicity to fish : LC50: 20 - 50 mg/l Exposure time: 96 h

Species: Danio rerio (zebra fish)
By analogy with a similar product.

Toxicity to bacteria : EC50: > 1,000 mg/l
Method: OECD 209

Elimination information (persistence and degradability)

Biodegradability : Result: Not readily biodegradable.
Method: OECD 301 D

Further information on ecology

Chemical Oxygen Demand (COD) : 1.716 mg/g

SECTION 13. DISPOSAL CONSIDERATIONS

Further information : Dispose of as hazardous waste in compliance with local and national regulations.
For disposal, this material is a flammable hazardous waste under RCRA.



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Contaminated packaging : Packaging that cannot be cleaned should be disposed of as product waste

RCRA hazardous waste : RCRA number: D001
Yes -- If it becomes a waste as sold.

SECTION 14. TRANSPORT INFORMATION

DOT

Not restricted

IATA

UN number : 1993
Description of the goods : Flammable liquid, n.o.s.
(Ethyl lactate, n-Butyl acetate)
Class : 3
Packing group : III
Labels : 3
Environmentally hazardous : no
Additional data for transport : PASSENGER AIRCRAFT SHIPMENT OF GLASS
CONTAINERS >2.5L NOT PERMITTED. CARGO AIRCRAFT
ONLY!

IMDG

UN number : 1993
Description of the goods : FLAMMABLE LIQUID, N.O.S.
(Ethyl lactate, n-Butyl acetate)
Class : 3
Packing group : III
Labels : 3
EmS Number 1 : F-E
EmS Number 2 : S-E

Marine pollutant : no
Environmentally hazardous : no

SECTION 15. REGULATORY INFORMATION

Notification status

TSCA : One or more components of this product are not listed on the



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TSCA Inventory. The components, however, are covered by Low Volume Exemptions (LVEs). These LVE-based products may only be used in conventional photolithographic processes consistent with their design. For any applications outside of this intended purpose, contact the vendor first.

TSCA : One of the ingredients of this product (PMN P-94-1527) is used under a TSCA Section 5 Significant New Use Rule, SNUR. While the SNUR allows use in photoresist formulations, it triggers TSCA Section 12B Export Notification to the US EPA for the first time it is exported to each country. See 40 CFR 707.60.

DSL : This product contains one or several components that are not on the Canadian DSL nor NDSL.

WHMIS Classification : B3: Combustible Liquid
D2B: Toxic Material Causing Other Toxic Effects

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 :
n-Butyl acetate 123-86-4 5000 lbs

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.



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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 SOCM I Intermediate or Final Volatile Organic Compounds (VOC) - 40 CFR part 60.489

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCM I Intermediate or Final VOC's (40 CFR 60.489):

n-Butyl acetate 123-86-4

Clean Water Act

The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:

n-Butyl acetate 123-86-4

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:



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n-Butyl acetate 123-86-4

US State Regulations

Massachusetts Right To Know Components : n-Butyl acetate 123-86-4
Ethyl lactate 97-64-3

Pennsylvania Right To Know Components : Ethyl lactate 97-64-3
n-Butyl acetate 123-86-4
Cresol novolak resin 27029-76-1
Diazonaphthoquinonesulfonic ester 67829000004-5755P
Phenolic polyol 67829000004-5521P

New Jersey Right To Know Components : Ethyl lactate 97-64-3
n-Butyl acetate 123-86-4
Cresol novolak resin 27029-76-1
Diazonaphthoquinonesulfonic ester 67829000004-5755P
Phenolic polyol 67829000004-5521P

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.

Other Regulatory Information: Remarks:
This product is subject to the Export and Customs Control Regulations of the United States and is not to be exported or transferred without prior notification to and approval by the vendor, and not without obtaining proper U.S.A. and local government authorizations.
ECCN 3C992



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SECTION 16. OTHER INFORMATION

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.

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