SECTION 1. IDENTIFICATION

Product identifier
Product name : AZ 1505 Photoresist

Product number : 583534

Recommended use of the chemical and restrictions on use
Recommended use : Materials for use in technical applications
                   Intermediate for electronic industry

Details of the supplier of the safety data sheet
Company : EMD Performance Materials, an Affiliate of Merck KGaA,
          Darmstadt, Germany, 1200 Intrepid Avenue, Suite 300,
          Philadelphia, PA 19112, 1-888-367-3275,
          www.emdgroup.com/electronics

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
Flammable liquids : Category 3

Specific target organ toxicity - single exposure : Category 3 (Central nervous system)

GHS label elements
Hazard pictograms : 
[Flammable liquid and vapor icon]

Signal Word : Warning

Hazard Statements : H226 Flammable liquid and vapor.
                   H336 May cause drowsiness or dizziness.
Precautionary Statements:

Prevention:
P210 Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
P233 Keep container tightly closed.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/ eye protection/ face protection.

Response:
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.
P370 + P378 In case of fire: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide to extinguish.

Storage:
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P403 + P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.

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

Other hazards
None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture: Mixture

Hazardous ingredients

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Concentration (% w/w)</th>
<th>CAS-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Methoxy-2-propanol acetate</td>
<td>&gt;= 70 - &lt; 90</td>
<td>108-65-6</td>
</tr>
<tr>
<td>Diazonaphthoquinonesulfonic ester</td>
<td>&gt;= 1 - &lt; 5</td>
<td>67829000004-7792P</td>
</tr>
</tbody>
</table>

SECTION 4. FIRST AID MEASURES
SAFETY DATA SHEET

AZ 1505 Photoresist

Version 1.0
Revision Date: 27.02.2020
SDS Number: 70MDGM583534

If inhaled : Fresh air.

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

In case of eye contact : Rinse out with plenty of water. Remove contact lenses.

If swallowed : Make victim drink water (two glasses at most). Consult doctor if feeling unwell.

Most important symptoms and effects, both acute and delayed : We have no description of any toxic symptoms.

Notes to physician : No information available.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : Water
Foam
Carbon dioxide (CO2)
Dry powder

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

Specific hazards during fire fighting : Combustible.

Vapors are heavier than air and may spread along floors. Development of hazardous combustion gases or vapors possible in the event of fire.

Further information : Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Special protective equipment for fire-fighters : In the event of fire, wear self-contained breathing apparatus. Well closed full protective clothing (coat and pants) including helmet.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Advice for non-emergency personnel:
Do not breathe vapors, aerosols.
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 : No special precautionary measures necessary.
Methods and materials for containment and cleaning up: Observe possible material restrictions (see sections 7 and 10).
Take up 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 protection against fire and explosion: Do not pressurise, cut, weld, braze, solder, drill, or grind on containers.
Advice on safe handling: Keep away from fire (No Smoking).
Observe label precautions.

Conditions for safe storage, including any incompatibilities
Conditions for safe storage: Store in original container.
Keep tightly closed in a dry, cool and well-ventilated place.
Storage conditions: Keep container tightly closed in a dry and well-ventilated place.
Keep away from heat and sources of ignition.
Risks from decomposition products: see section 10

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters / Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Methoxy-2-propanol acetate</td>
<td>108-65-6</td>
<td>TWA</td>
<td>50 ppm</td>
<td>US WEEL</td>
</tr>
</tbody>
</table>

Hazardous components without workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diazonaphthoquinonesulfonic ester</td>
<td>67829000000</td>
</tr>
<tr>
<td></td>
<td>4-7792P</td>
</tr>
</tbody>
</table>

Engineering measures: Handle only in a place equipped with local exhaust (or other appropriate exhaust).
Ensure that eye flushing systems and safety showers are located close to the working place. 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**: Not required; except in case of aerosol formation.

**Hand protection**

**Additional Protection**: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products.

**Eye protection**: Safety glasses

**Hygiene measures**: Avoid contact with skin, eyes and clothing. Wash hands and face before breaks and immediately after handling the product. Keep away from food and drink.

### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>solution</td>
</tr>
<tr>
<td>Form</td>
<td>liquid</td>
</tr>
<tr>
<td>Color</td>
<td>red</td>
</tr>
<tr>
<td>Odor</td>
<td>No information available.</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>No information available.</td>
</tr>
<tr>
<td>pH</td>
<td>No information available.</td>
</tr>
<tr>
<td>Melting point</td>
<td>No information available.</td>
</tr>
<tr>
<td>Boiling point/boiling range</td>
<td>293 °F (145 °C) (solvent)</td>
</tr>
</tbody>
</table>
**AZ 1505 Photoresist**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value/Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flash point</td>
<td>108 °F (42 °C)</td>
</tr>
<tr>
<td>Method: DIN 51755 Part 1</td>
<td></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>No information available.</td>
</tr>
<tr>
<td>Upper explosion limit</td>
<td>No information available.</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>No information available.</td>
</tr>
<tr>
<td>Relative vapor density</td>
<td>No information available.</td>
</tr>
<tr>
<td>Density</td>
<td>1 g/cm³</td>
</tr>
<tr>
<td>at 77 °F (25 °C)</td>
<td></td>
</tr>
<tr>
<td>Relative density</td>
<td>No information available.</td>
</tr>
<tr>
<td>Water solubility</td>
<td>No information available.</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>No information available.</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>No information available.</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>No information available.</td>
</tr>
</tbody>
</table>

**SECTION 10. STABILITY AND REACTIVITY**

Reactivity: See below

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

Possibility of hazardous: no information available.
Conditions to avoid: Keep away from open flames, hot surfaces and sources of ignition. Extremes of temperature and direct sunlight.

Incompatible materials: no information available

Hazardous decomposition products: no information available

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.

Acute dermal toxicity
Acute toxicity estimate: 3,040 mg/kg
Calculation method

Experience with human exposure
Other Relevant Toxicity Information:
Handle in accordance with good industrial hygiene and safety practice.

Components

1-Methoxy-2-propanol acetate (108-65-6):

Acute oral toxicity
LD50 Rat: 6,190 mg/kg
OECD Test Guideline 401(ECHA)

Acute inhalation toxicity
LC50 Rat: 23.4 mg/l; vapor (OECD SIDS)
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Acute dermal toxicity
LD50 Rat: > 2,000 mg/kg
OECD Test Guideline 402 (ECHA)

Skin irritation
Rabbit
Result: No skin irritation
OECD Test Guideline 404 (ECHA)

Eye irritation
Rabbit
Result: No eye irritation
OECD Test Guideline 405 (ECHA)

Sensitization
Maximization Test Guinea pig
Result: Does not cause skin sensitization.
Method: OECD Test Guideline 406 (ECHA)

Repeated dose toxicity
Rat
male and female
Oral
44 d
daily
NOAEL: >= 1,000 mg/kg
OECD Test Guideline 422 (ECHA), Subacute toxicity

Germ cell mutagenicity
Genotoxicity in vitro
Ames test
Salmonella typhimurium
Result: negative
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471 (ECHA)

Teratogenicity
Application Route: Inhalation
Rat
Number of exposures: daily
Test period: 21 d
Method: OECD Test Guideline 414 (ECHA)
STOT-single exposure
Assessment: May cause drowsiness or dizziness.
Remarks: (ECHA)
Diazonaphthoquinonesulfonic ester (67829000004-7792P):

**Acute oral toxicity**
LD50 Rat: > 5,000 mg/kg
OECD Test Guideline 401 (ECHA)

**Skin irritation**
Rabbit
Result: Skin irritation
OECD Test Guideline 404 (ECHA)

**Eye irritation**
Result: No eye irritation
in vitro eye irritation test
(own results)

**Sensitization**
Local lymph node assay (LLNA) Mouse
Result: Does not cause skin sensitization.
Method: OECD Test Guideline 442B (ECHA)

**Germ cell mutagenicity**
Genotoxicity in vitro
Ames test
Salmonella typhimurium
Result: negative
Metabolic activation: with and without metabolic activation
Method: Mutagenicity (Salmonella typhimurium - reverse mutation assay)
(ECHA)

### SECTION 12. ECOLOGICAL INFORMATION

**Ecotoxicity**
**Product**

**Persistence and degradability**
No information available.

**Bioaccumulative potential**
No information available.

**Mobility in soil**
No information available.

*Additional ecological information*
No ecological problems are to be expected when the product is handled and used with due care and attention.

**Components**
1-Methoxy-2-propanol acetate (108-65-6):

**Toxicity to fish**
static test LC50 Oncorhynchus mykiss (rainbow trout): 134 mg/l; 96 h
OECD Test Guideline 203 (ECHA)

**Toxicity to daphnia and other aquatic invertebrates**
static test EC50 Daphnia magna (Water flea): 408 mg/l; 48 h
OECD Test Guideline 202 (ECHA)

**Toxicity to algae**
static test NOEC Pseudokirchneriella subcapitata (green algae): > 1,000 mg/l; 96 h
Analytical monitoring: yes
OECD Test Guideline 201 (ECHA)

**Toxicity to bacteria**
static test EC10 activated sludge: > 1,000 mg/l; 30 min
OECD Test Guideline 209 (ECHA)

**Toxicity to fish (Chronic toxicity)**
flow-through test NOEC Oryzias latipes (Orange-red killifish): 47.5 mg/l; 14 d
Analytical monitoring: yes
OECD Test Guideline 204 (ECHA)

**Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)**
semi-static test NOEC Daphnia magna (Water flea): >= 100 mg/l; 21 d
Analytical monitoring: yes
OECD Test Guideline 211 (ECHA)

**Biodegradability**
83 %; 28 d; aerobic
OECD Test Guideline 301F (ECHA)
Readily biodegradable.

**Biochemical Oxygen Demand (BOD)**
330 mg/g (5 d)
(IUCLID)

**Chemical Oxygen Demand (COD)**
1,740 mg/g
(IUCLID)

**Theoretical oxygen demand (ThOD)**
1,820 mg/g
(IUCLID)
Partition coefficient: n-octanol/water
log Pow: 1.2 (20 °C)
OECD Test Guideline 117
Bioaccumulation is not expected. (ECHA)

Substance does not meets the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

Diazonaphthoquinonesulfonic ester (67829000004-7792P):

Toxicity to fish
static test LC50 Danio rerio (zebra fish): 22 - 50 mg/l; 96 h
OECD Test Guideline 203 (ECHA)

Toxicity to daphnia and other aquatic invertebrates
LC50 Daphnia magna (Water flea): 13.78 mg/l; 48 h The value is calculated

Toxicity to algae
static test EL50 Desmodesmus subspicatus (green algae): 12 mg/l; 72 h
Analytical monitoring: yes
OECD Test Guideline 201 (ECHA)

Toxicity to bacteria
IC50: > 1,000 mg/l
OECD Test Guideline 209

static test EL50 Desmodesmus subspicatus (green algae): 12 mg/l; 72 h
OECD Test Guideline 201

Biodegradability
39 %; 28 d; aerobic
OECD Test Guideline 301D (ECHA)
Not readily biodegradable.

Partition coefficient: n-octanol/water
log Pow: 3.2 (calculated)
EPI Suite™ Bioaccumulation is not expected.

Surface tension
72 mN/m
at 20 °C
Method: OECD Test Guideline 115

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.

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### SECTION 14. TRANSPORT INFORMATION

**DOT / 49CFR**

- **UN/ID/NA number**: UN 1993
- **Proper shipping name**: Flammable liquids, n.o.s. (2-methoxy-1-methylethyl acetate)
- **Class**: 3
- **Packing group**: III
- **Labels**: FLAMMABLE LIQUID
- **ERG Code**: 128
- **Marine pollutant**: no
- **Remarks**: LTD QTY =< 5 L net capacity, as per 49 CFR 173.150, Combustible Liquid if flash point >= 38 °C (100 °F), as per 49 CFR.173.150(f)

**International Regulations**

**IATA-DGR**

- **UN/ID No.**: UN 1993
- **Proper shipping name**: Flammable liquid, n.o.s. (2-methoxy-1-methylethyl acetate)
- **Class**: 3
- **Packing group**: III
- **Labels**: Flammable Liquids
- **Packing instruction (cargo aircraft)**: 366
- **Packing instruction (passenger aircraft)**: 355

**IMDG-Code**

- **UN number**: UN 1993
- **Proper shipping name**: FLAMMABLE LIQUID, N.O.S. (2-methoxy-1-methylethyl acetate)
- **Class**: 3
- **Packing group**: III
- **Labels**: 3
- **EmS Code**: F-E, S-E
- **Marine pollutant**: no

**Special precautions for user**

Not applicable
SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know

CERCLA Reportable Quantity
Cresol 1319-77-3 100lbs

*: Calculated RQ exceeds reasonably attainable upper limit.

SARA 304 Extremely Hazardous Substances Reportable Quantity

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
The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:
Cresol 1319-77-3
Formaldehyde 50-00-0

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:
Cresol 1319-77-3
Formaldehyde 50-00-0

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
Formaldehyde 50-00-0
Pennsylvania Right To Know
acetone 67-64-1
Cresol 1319-77-3
Formaldehyde 50-00-0

California Prop. 65
Formaldehyde
WARNING: This product can expose you to one or more chemicals which is known to the State of California to cause cancer. For more information, go to www.P65Warnings.ca.gov 50-00-0

N-methyl-2-pyrrolidone 872-50-4
WARNING: This product can expose you to one or more chemicals which is known to the State of California to cause birth defects or other reproductive harm. For more information, go to www.P65Warnings.ca.gov

The ingredients of this product are reported in the following inventories:
TSCA : All substances listed on the TSCA Active Inventory.
DSL : This product or its components are listed on or compliant with the DSL.

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.