SECTION 1. IDENTIFICATION

Product identifier

Product name : AZ NLOF 2020 PHOTORESIST
Product number : 583503

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

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.

**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

<table>
<thead>
<tr>
<th>Hazardous ingredients</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>Modified melamine-formaldehyde resin</td>
<td>&gt;= 1 - &lt; 5</td>
<td>67829000004-5594P</td>
</tr>
</tbody>
</table>

### SECTION 4. FIRST AID MEASURES
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 : Suppress (knock down) gases/vapors/mists with a water spray jet. 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, : Advice for non-emergency personnel:
protective equipment and emergency procedures
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>Modified melamine-formaldehyde resin</td>
<td>6782900000</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
Physical state: solution
Form: liquid
Color: red
Odor: characteristic pungent
Odor Threshold: No information available.
pH: No information available.
Melting point: No information available.
Boiling point/boiling range: 293 °F (145 °C)
Flash point: 118 °F (48 °C)
Evaporation rate: No information available.
Flammability (solid, gas): No information available.
Lower explosion limit: No information available.
Upper explosion limit: No information available.
Vapor pressure: No information available.
Relative vapor density: No information available.
Density: 1.041 g/cm³
Relative density: No information available.
Water solubility: partly soluble - phase separation
Partition coefficient: n-octanol/water: No information available.
Autoignition temperature: No information available.
 Decomposition temperature: No information available.
Viscosity, dynamic: No information available.
Explosive properties: No information available.
Oxidizing properties: No information available.

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: 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: 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.

Acute dermal toxicity
Acute toxicity estimate: 3,570 mg/kg
Calculation method

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.

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.

SECTION 14. TRANSPORT INFORMATION

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

International Regulations

IATA-DGR
<table>
<thead>
<tr>
<th>UN/ID No.</th>
<th>UN 1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proper shipping name</td>
<td>Flammable liquid, n.o.s.</td>
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</tr>
<tr>
<td>Class</td>
<td>3</td>
</tr>
<tr>
<td>Packing group</td>
<td>III</td>
</tr>
<tr>
<td>Labels</td>
<td>Flammable Liquids</td>
</tr>
<tr>
<td>Packing instruction (cargo aircraft)</td>
<td>366</td>
</tr>
<tr>
<td>Packing instruction (passenger aircraft)</td>
<td>355</td>
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</table>

IMDG-Code
<table>
<thead>
<tr>
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<th>UN 1993</th>
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<tbody>
<tr>
<td>Proper shipping name</td>
<td>FLAMMABLE LIQUID, N.O.S.</td>
</tr>
<tr>
<td></td>
<td>(2-methoxy-1-methylethyl acetate)</td>
</tr>
<tr>
<td>Class</td>
<td>3</td>
</tr>
<tr>
<td>Packing group</td>
<td>III</td>
</tr>
<tr>
<td>Labels</td>
<td>3</td>
</tr>
<tr>
<td>EmS Code</td>
<td>F-E, S-E</td>
</tr>
<tr>
<td>Marine pollutant</td>
<td>no</td>
</tr>
</tbody>
</table>

Special precautions for user
Not applicable
SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know

CERCLA Reportable Quantity

<table>
<thead>
<tr>
<th>Chemical</th>
<th>CAS Number</th>
<th>Reportable Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde</td>
<td>50-00-0</td>
<td>100lbs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100lbs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100lbs</td>
</tr>
</tbody>
</table>

*: 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. CleanWaterAct, Section 311, Table 116.4A:

<table>
<thead>
<tr>
<th>Chemical</th>
<th>CAS Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde</td>
<td>50-00-0</td>
</tr>
<tr>
<td>Cresol</td>
<td>1319-77-3</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Chemical</th>
<th>CAS Number</th>
</tr>
</thead>
<tbody>
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<td>50-00-0</td>
</tr>
<tr>
<td>Cresol</td>
<td>1319-77-3</td>
</tr>
</tbody>
</table>

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
Formaldehyde 50-00-0
Cresol 1319-77-3

California Prop. 65
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
Formaldehyde 50-00-0

The ingredients of this product are reported in the following inventories:
TSCA: All chemical substances in this product are either listed on the TSCA Active Inventory, covered by Low Volume Exemption (LVE), or other TSCA exemption.
DSL: This product contains one or several components that are not on the Canadian DSL nor NDSL.

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.