SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier
Trade name : AZ MiR(TM) 701 Photoresist (14 CPS)

1.2 Relevant identified uses of the substance or mixture and uses advised against
Use of the Substance/Mixture : Electronic industry
Intermediate for electronic industry

1.3 Details of the supplier of the safety data sheet
Company : Merck Performance Materials GmbH
Rheingaustrasse 190-196, 65203 Wiesbaden Germany
Telephone : +49 (0)611 962 8563
E-mail address of person responsible for the SDS : PSE@merckgroup.com

1.4 Emergency telephone number
Emergency telephone number : +49 69 305 6418 (24/7, English and German)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture
Classification (REGULATION (EC) No 1272/2008)

GHS Classification
Flammable liquids, Category 3
H226: Flammable liquid and vapour.
On basis of test data.
Serious eye damage, Category 1
H318: Causes serious eye damage.
Calculation method
Specific target organ toxicity - single exposure, Category 3
H335: May cause respiratory irritation.
Respiratory system
Calculation method

2.2 Label elements
GHS-Labelling
Symbol(s): Danger

Hazard statements:
- H226 Flammable liquid and vapour.
- H318 Causes serious eye damage.
- H335 May cause respiratory irritation.

Precautionary statements:

Prevention:
- P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
- 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.
- 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 or doctor/ physician.
- P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

Hazardous components which must be listed on the label:
- 97-64-3 ethyl lactate
- 123-86-4 n-butyl acetate

2.3 Other hazards
No information available.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Chemical characterization
Preparation of polymers and diazo compounds in organic solvents (halogenfree).

<table>
<thead>
<tr>
<th>Hazardous components</th>
</tr>
</thead>
<tbody>
<tr>
<td>ethyl lactate</td>
</tr>
</tbody>
</table>

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SECTION 4: First aid measures

4.1 Description of first aid measures

General advice: Take off all contaminated clothing immediately. If symptoms persist, call a physician. Show this safety data sheet to the doctor in attendance. First aider needs to protect himself.

Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a physician immediately. Show this safety data sheet to the doctor in attendance.

Skin contact: Wash off immediately with plenty of water. If skin irritation persists, call a physician.

Eye contact: Rinse thoroughly with plenty of water for at least 15 minutes.
and consult a physician.

Ingestion: Do NOT induce vomiting. Call a physician immediately. Show this safety data sheet to the doctor in attendance. Immediately give large quantities of water to drink.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment: Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media: alcohol-resistant foam dry powder carbon dioxide water spray jet

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting: In case of fires, hazardous combustion gases are formed:
Carbon monoxide (CO)
Carbon dioxide (CO2)
Nitrogen oxides (NOx)
Sulphur oxides

5.3 Advice for firefighters

Special protective equipment for firefighters: Use self-contained breathing apparatus Well closed full protective clothing (coat and pants) including helmet.

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

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions: Refer to protective measures listed in sections 7 and 8.

6.2 Environmental precautions

Environmental precautions: Do not flush into surface water or sanitary sewer system. Avoid subsoil penetration.
6.3 Methods and materials for containment and cleaning up

Methods for cleaning up: Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal. Clean contaminated floors and objects thoroughly while observing environmental regulations.

6.4 Reference to other sections

Additional advice: Information regarding Safe handling, see chapter 7. Information regarding personal protective measures see, chapter 8. Information regarding Waste Disposal, see chapter 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling: Provide sufficient air exchange and/or exhaust in work rooms.

Advice on protection against fire and explosion: Normal measures for preventive fire protection.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers: Store in original container.

Further information on storage conditions: Keep container tightly closed in a dry and well-ventilated place. Protect against light.

Advice on common storage: Keep away from food and drink.

7.3 Specific end use(s)

: No information available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Components with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>n-butyl acetate</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS-No.</td>
<td>123-86-4</td>
</tr>
</tbody>
</table>
Value : AGW
Control parameters : 62 ppm
300 mg/m3
Category short-time exposure : 2(I)
Update : 2012-09-13
Basis : DE TRGS 900
Further information : AGS: Commission for dangerous substancesWhen there is compliance with the OEL and biological tolerance values, there is no risk of harming the unborn child

**Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:**
n-butyl acetate : End Use: Workers
Exposure routes: Inhalation
Potential health effects: Acute effects
Value: 960 mg/m3

End Use: Workers
Exposure routes: Inhalation
Potential health effects: Chronic effects
Value: 480 mg/m3

End Use: Consumers
Exposure routes: Inhalation
Potential health effects: Acute effects
Value: 859,7 mg/m3

End Use: Consumers
Exposure routes: Inhalation
Potential health effects: Chronic effects
Value: 102,34 mg/m3

**Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:**
n-butyl acetate : Fresh water
Value: 0,18 mg/l

Marine water
Value: 0,018 mg/l

Fresh water sediment
Value: 0,981 mg/kg

Marine sediment
Value: 0,0981 mg/kg

Soil
Value: 0,0903 mg/kg
8.2 Exposure controls

Engineering measures
Provide sufficient air exchange and/or exhaust in work rooms.

Personal protective equipment

Respiratory protection: Use respiratory protection in case of insufficient exhaust ventilation or prolonged exposure
Recommended Filter type: ABEK-filter

Hand protection: Break through time: > 10 min
Glove thickness: > 0,4 mm
For short-term exposure (splash protection):
Nitrile rubber gloves.
Remarks: These types of protective gloves are offered by various manufacturers. Please note the manufacturers’ detailed statements, especially about the minimum thickness and the minimum breakthrough time. Consider also the particular working conditions under which the gloves are being used.

Eye protection: Tightly fitting safety goggles

Skin and body protection: protective clothing

Hygiene measures: At work do not eat, drink, smoke or take drugs.
Keep away from foodstuffs and beverages.
Wash hands before breaks and after work.
Use barrier skin cream.

Protective measures: Do not breathe vapours or spray mist.
Avoid contact with skin and eyes.
Observe the usual precautions for handling chemicals.

Environmental exposure controls
General advice: Do not flush into surface water or sanitary sewer system.
Avoid subsoil penetration.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance
Form: Liquid
Colour: yellow to red
Odour: characteristic

Safety data

Flash point: 49 °C
Ignition temperature: not determined
Thermal decomposition: No decomposition if used as prescribed.
Lower explosion limit: not determined
Upper explosion limit: not determined
Flammability (solid, gas): not determined
Oxidizing properties: not determined
Auto-ignition temperature: not determined
Burning number: not determined
pH: Not applicable
Freezing point: not determined
Starts to boil: 155 °C
Sublimation point: not determined
Vapour pressure: app. 5.3 hPa
Density: 1,05 g/cm3
Water solubility: The solvent is partially water soluble but the product forms two layers.
Partition coefficient: n-octanol/water: not reasonable
Solubility in other solvents: not determined
Viscosity, dynamic: not determined
Viscosity, kinematic: not determined
Relative vapour density: not determined
Corrosive in contact with metals: not determined
Evaporation rate: not determined

9.2 Other information

Further information: Remarks: No information available.

SECTION 10: Stability and reactivity

10.1 Reactivity
No dangerous reaction known under conditions of normal use.

10.2 Chemical stability
No decomposition if stored and applied as directed.

10.3 Possibility of hazardous reactions
Hazardous reactions: Reactions with acids, alkalis and oxidizing agents.
10.4 Conditions to avoid
Conditions to avoid: Heat, flames and sparks.

10.5 Incompatible materials
Materials to avoid:
- Oxidizing agents
- Strong acids
- Bases

10.6 Hazardous decomposition products
Hazardous decomposition products: when handled and stored appropriately no dangerous decomposition products are known

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Product

- Acute oral toxicity: no data available
- Acute inhalation toxicity: no data available
- Acute dermal toxicity: no data available
- Skin corrosion/irritation: no data available
- Serious eye damage/eye irritation: no data available
- Respiratory or skin sensitisation: no data available
- Further information: no data available

Components:

4,4’-(1-{4-[1-(4-hydroxyphenyl)-1-methylethyl]phenyl}ethylidene)diphenol:
- Acute oral toxicity: LD50: > 5.000 mg/kg, rat
- Skin corrosion/irritation: rabbit, Result: No skin irritation, OECD 404
- Serious eye damage/eye irritation: rabbit, Result: No eye irritation, OECD 405
- Respiratory or skin sensitisation: Buehler Test, guinea pig, Result: Did not cause sensitisation on laboratory animals.
- Germ cell mutagenicity
- Genotoxicity in vitro: Ames test, with or without metabolic activation, Result: negative
n-butyl acetate:
Acute oral toxicity: LD50: > 10,000 mg/kg, rat
Acute inhalation toxicity: LC50: > 21,1 mg/l, 4 h, rat, vapour, OECD Test Guideline 403
Acute dermal toxicity: LD50: > 14,000 mg/kg, rabbit
Skin corrosion/irritation: rabbit, Result: No skin irritation, OECD Test Guideline 404
Serious eye damage/eye irritation: rabbit, Result: No eye irritation, OECD Test Guideline 405
Respiratory or skin sensitisation: Maximisation Test, guinea pig, Result: Did not cause sensitisation on laboratory animals.
STOT - single exposure: Assessment: May cause drowsiness or dizziness.
Further information: Has a degreasing effect on skin

SECTION 12: Ecological information

12.1 Toxicity

Components:
4,4'-(1-[(4-[1-(4-hydroxyphenyl)-1-methylethyl]phenyl)ethyldene]diphenol:
Toxicity to fish: LC50 (Oryzias latipes (Orange-red killifish)): > 1.000 mg/l
Exposure time: 48 h
Toxicity to daphnia and other aquatic invertebrates: (Daphnia magna (Water flea)): Exposure time: 96 h
Method: OECD 202
Remarks: No observable toxic effect in saturated solution.
n-butyl acetate:
Toxicity to fish: LC50 (Pimephales promelas (fathead minnow)): 18 mg/l
Exposure time: 96 h
Test Type: flow-through test
Toxicity to daphnia and other aquatic invertebrates: EC50 (Daphnia sp.): 44 mg/l
Exposure time: 48 h
Test Type: static test
Toxicity to algae: EC50 (Scenedesmus subspicatus): 675 mg/l
End point: growth rate
Exposure time: 72 h
Method: DIN 38412 T.9
Toxicity to bacteria: IC50 (activated sludge): 356 mg/l
Exposure time: 40 h
Test Type: aquatic
12.2 Persistence and degradability

Components:

4,4’-(1-[4-[1-(4-hydroxyphenyl)-1-methylethyl]phenyl]ethyldiene)diphenol:
Biodegradability: Result: Not readily biodegradable.
Biodegradation: < 10 %
Exposure time: 28 d
Method: Modified Sturm Test

n-butyl acetate:
Biodegradability: Result: Readily biodegradable.

12.3 Bioaccumulative potential

Components:

4,4’-(1-[4-[1-(4-hydroxyphenyl)-1-methylethyl]phenyl]ethyldiene)diphenol:
Partition coefficient: n-octanol/water log Pow: 3.3
Method: OECD Guide-line 117

n-butyl acetate:
Bioaccumulation Remarks: Does not accumulate in organisms.
Partition coefficient: n-octanol/water log Pow: 1.85 (20 °C)

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment

Product:
Assessment: This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher..

Components:
n-butyl acetate:
Assessment: The substance does not fulfill the PBT criteria.. The substance does not fulfill the vPvB criteria..

12.6 Other adverse effects

Product:
Additional ecological information no data available
SECTION 13: Disposal considerations

13.1 Waste treatment methods

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

Contaminated packaging: Dispose of as unused product.

SECTION 14: Transport information

ADR
UN number: 1993
Description of the goods: FLAMMABLE LIQUID, N.O.S.
(Ethyl lactate, n-Butyl acetate)
Class: 3
Packing group: III
Classification Code: F1
Labels: 3
Environmentally hazardous: no

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

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

RID
UN number: 1993
Description of the goods: FLAMMABLE LIQUID, N.O.S.
(Ethyl lactate, n-Butyl acetate)
AZ MiR(TM) 701 Photoresist (14 CPS)

Class: 3
Packing group: III
Classification Code: F1
Labels: 3
Environmentally hazardous: no

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

International Chemical Weapons Convention (CWC):
Schedules of Toxic Chemicals and Precursors: Neither banned nor restricted

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII):
123-86-4

Regulation (EC) No 649/2012 of the European Parliament and the Council concerning the export and import of dangerous chemicals:
Neither banned nor restricted

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59):
This product does not contain substances of very high concern (Regulation (EC) No 1907/2006 (REACH), Article 57).

REACH - List of substances subject to authorisation (Annex XIV):
Neither banned nor restricted

Regulation (EC) No 1005/2009 on substances that deplete the ozone layer:
Neither banned nor restricted

Regulation (EC) No 850/2004 on persistent organic pollutants:
Neither banned nor restricted

Water contaminating class (Germany):
2 water polluting
Remarks: Data in accordance with the VwVsS regulation for mixtures.

15.2 Chemical Safety Assessment
A Chemical Safety Assessment is not required for a mixture.

SECTION 16: Other information
Full text of H-Statements referred to under sections 2 and 3.
AZ MiR(TM) 701 Photoresist (14 CPS)
Substance No.: 00000100048  Revision Date 09.04.2015
Version 3.0 DE-GHS

H226  Flammable liquid and vapour.
H318  Causes serious eye damage.
H335  May cause respiratory irritation.
H336  May cause drowsiness or dizziness.
H413  May cause long lasting harmful effects to aquatic life.

Decimal notation: "Thousands" places are identified with a dot (example: 2.000 mg/kg means "two thousand mg/kg"). Decimal places are identified with a comma (example: 1,35 g/cm3)

Further information:
Further information: Observe national and local legal requirements

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.

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