

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No 2015/830



## E-Beam Resists AR-BR 5400

Revision date: 24/2/2016

Version: 7

Language: en-GB,IE

Date of print: 24/2/2016

Page: 1 of 11

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

#### 1.1 Product identifier

Trade name: E-Beam Resists AR-BR 5400

CAS-Number: 107-98-2

EC-number: 203-539-1

EU index number: 603-064-00-3

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

General use: intermediate for electronic industry

#### 1.3 Details of the supplier of the safety data sheet

Company name: Allresist  
Gesellschaft für chemische Produkte zur Mikrostrukturierung mbH  
Street/POB-No.: Am Biotop 14  
Postal Code, city: 15344 Strausberg  
Germany  
WWW: www.allresist.de  
E-mail: info@allresist.de  
Telephone: +49 (0)33 41-35 93-0  
Telefax: +49 (0)33 41-35 93-29  
Dept. responsible for information:  
Frau Feldt, Email: doerte.feldt@allresist.de

#### 1.4 Emergency telephone number

Telephone: +49 (0)33 41-35 93-0  
Only available during office hours.

### SECTION 2: Hazards identification

#### 2.1 Classification of the substance or mixture

##### Classification according to EC regulation 1272/2008 (CLP)

Flam. Liq. 3; H226 Flammable liquid and vapour.

STOT SE 3; H336 May cause drowsiness or dizziness.

#### 2.2 Label elements

##### Labelling (CLP)



Signal word: **Warning**

Hazard statements: H226 Flammable liquid and vapour.  
H303 May be harmful if swallowed.  
H336 May cause drowsiness or dizziness.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No 2015/830



## E-Beam Resists AR-BR 5400

Revision date: 24/2/2016

Version: 7

Language: en-GB,IE

Date of print: 24/2/2016

Page: 2 of 11

### Precautionary statements:

|                |  |
|----------------|--|
| P210           | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.             |
| P243           | Take precautionary measures against static discharge.  |
| P261           | Avoid breathing vapours.   |
| P303+P361+P353 | IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. |
| P304+P340      | IF INHALED: Remove person to fresh air and keep comfortable for breathing.                                 |
| P312           | Call a POISON CENTER/doctor if you feel unwell.  |
| P403+P233      | Store in a well-ventilated place. Keep container tightly closed.   |
| P405           | Store locked up.   |

### Special labelling

Text for labelling: Contains 1-Methoxy-2-propanol.

### 2.3 Other hazards

Narcotic effect in case of higher doses or prolonged exposure.  
Special danger of slipping by leaking/spilling product.

## SECTION 3: Composition / information on ingredients

3.1 Substances: not applicable

### 3.2 Mixtures

Hazardous ingredients:

| Ingredient                        | Designation          | Content | Classification   |
|-----------------------------------|----------------------|---------|--|
| EC No. 203-539-1<br>CAS 107-98-2  | 1-Methoxy-2-propanol | > 80 %  | CLP: Flam. Liq. 3; H226,<br>STOT SE 3; H336                        |
| EG-Nr. 215-293-2<br>CAS 1319-77-3 | Cresol-isomers       | < 0,5 % | CLP: Acute Tox. 3; H301<br>Acute Tox. 3; H311. Skin Corr. 1B; H314 |

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

In case of inhalation: Provide fresh air.  
Move victim to fresh air, provide oxygen as needed. Seek medical attention.

Following skin contact: After contact with skin, wash immediately with plenty of water.  
Take off immediately all contaminated clothing. Seek medical aid in case of troubles.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No 2015/830



## E-Beam Resists AR-BR 5400

Revision date: 24/2/2016

Version: 7

Language: en-GB,IE

Date of print: 24/2/2016

Page: 3 of 11

After eye contact: Immediately flush eyes with plenty of flowing water for 10 to 15 minutes holding eyelids apart.  
Seek medical attention.

After swallowing: If swallowed, seek medical advice immediately and show this container or label.  
Do not induce vomiting without medical assistance.  
If victim is at risk of losing consciousness, position and transport on their side.  
Never give anything by mouth to an unconscious person.

### 4.2 Most important symptoms and effects, both acute and delayed

May cause drowsiness or dizziness.  
Danger of cutaneous absorption.  
Other symptoms: Mucous membrane irritation, vomiting.

### 4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically.  
On irritation of the respiratory system use an aerosol dispenser and treat with 5 doses of dexamethasone aerosol (e.g. Auxiloson, Thomae) every 10 minutes until symptoms cease.  
Cave: Causes depression of CNS.

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

Suitable extinguishing media:

Water fog, alcohol resistant foam, extinguishing powder, carbon dioxide.

Extinguishing media which must not be used for safety reasons:

strong water jet

### 5.2 Special hazards arising from the substance or mixture

Flammable liquid and vapour. Concentrated vapours are heavier than air.  
In case of warming: On contact with air, potentially explosive mixtures may develop.  
In case of fire may be liberated: Carbon monoxide and carbon dioxide

### 5.3 Advice for firefighters

Special protective equipment for firefighters:

Wear self-contained breathing apparatus. Wear protective equipment.

Additional information: Hazchem-Code: •2Y

Use water spray jet to protect personnel and to cool endangered containers.  
Do not allow fire water to penetrate into surface or ground water.

## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

Eliminate all ignition sources if safe to do so.  
Avoid contact with skin, eyes, and clothing.  
Do not breathe vapours. Wear protective equipment.  
Provide for sufficient ventilation, particularly in closed rooms.

### 6.2 Environmental precautions

Do not allow to penetrate into soil, waterbodies or drains.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No 2015/830



## E-Beam Resists AR-BR 5400

Revision date: 24/2/2016  
Version: 7

Language: en-GB,IE

Date of print: 24/2/2016  
Page: 4 of 11

### 6.3 Methods and material for containment and cleaning up

Absorb with liquid-binding material (e.g. sand, diatomaceous earth, acid- or universal binding agents) and place in closed containers for disposal.

Additional information: Use only non-sparking tools. Take precautionary measures against static discharges.  
Special danger of slipping by leaking/spilling product.

### 6.4 Reference to other sections

Refer additionally to section 8 and 13.

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

Advices on safe handling: Provide adequate ventilation, and local exhaust as needed.

Avoid contact with skin, eyes, and clothing. Do not breathe vapour.

Wear protective equipment. When using do not eat, drink or smoke.

Precautions against fire and explosion:

Keep away from sources of ignition. - No smoking. Take precautionary measures against static discharges. Use only non-sparking tools.

### 7.2 Conditions for safe storage, including any incompatibilities

Requirements for storerooms and containers:

Keep away from sources of ignition and heat. Protect from light.

Suitable material: Stainless steel, steel

Unsuitable materials: Aluminium, light metals, copper.

Keep container tightly closed. Storage temperature 10-22 °C.

Hints on joint storage:

Avoid contact with strong acids, strong bases and strong oxidizing agents.

Keep away from oxidizers.

Keep away from food, drink and animal feedingstuffs.

Storage class:

3 = Flammable liquids

### 7.3 Specific end use(s)

intermediate for electronic industry

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

Occupational exposure limit values:

| Type                     | Limit value   |
|--------------------------|---|
| Europe: IOELV: STEL      | 568 mg/m <sup>3</sup> ; 150 ppm (May be absorbed through the skin.) |
| Europe: IOELV: TWA       | 375 mg/m <sup>3</sup> ; 100 ppm (May be absorbed through the skin.) |
| Great Britain: WEL-STEEL | 560 mg/m <sup>3</sup> ; 150 ppm                                     |
| Great Britain: WEL-TWA   | 375 mg/m <sup>3</sup> ; 100 ppm                                     |
| Ireland: 15 minutes      | 568 mg/m <sup>3</sup> ; 150 ppm                                     |
| Ireland: 8 hours         | 375 mg/m <sup>3</sup> ; 100 ppm                                     |

Additional information: The product can be absorbed through skin.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No 2015/830



## E-Beam Resists AR-BR 5400

Revision date: 24/2/2016

Version: 7

Language: en-GB,IE

Date of print: 24/2/2016

Page: 5 of 11

DNEL/DMEL: Systemic effects:  
DNEL workers, long-term, inhalative: 369 mg/m<sup>3</sup>  
DNEL workers, short-term, inhalative: 553.5 mg/m<sup>3</sup>  
DNEL workers, long-term, dermal: 50.6 mg/kg bw/d  
DNEL consumers, long-term, inhalative: 43.9 mg/m<sup>3</sup>  
DNEL consumers, long-term, dermal: 18.1 mg/kg bw/d  
DNEL consumers, long-term, oral: 3.3 mg/kg bw/d

PNEC: PNEC water (freshwater): 10 mg/L  
PNEC water (marine water): 1 mg/L  
PNEC water (intermittent release): 100 mg/L  
PNEC sewage treatment plant: 100 mg/L  
PNEC sediment (freshwater): 52.3 mg/kg dw  
PNEC sediment (marine water): 52.2 mg/kg dw  
PNEC floor: 5.49 mg/kg dw

### 8.2 Exposure controls

Provide good ventilation and/or an exhaust system in the work area.

### Personal protection equipment

#### Occupational exposure controls

Respiratory protection: Respiratory protection must be worn whenever the WEL levels have been exceeded. Use filter type A (= against vapours of organic substances) according to EN 14387.

Hand protection: Protective gloves according to EN 374.  
Glove material: Butyl caoutchouc (butyl rubber)-Layer thickness 0.5 mm.  
Observe glove manufacturer's instructions concerning penetrability and breakthrough time.  
Unsuitable materials: natural rubber, nitrile rubber, PVC.

Eye protection: Tightly sealed goggles according to EN 166.

Body protection: Wear suitable protective clothing.

General protection and hygiene measures:  
Avoid contact with skin, eyes, and clothing. Take off immediately all contaminated clothing.  
Do not breathe vapours. Wear protective equipment.  
When using do not eat, drink or smoke.  
Wash hands before breaks and after work.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

Appearance: Form: liquid  
Colour: colourless

Odour: sweet

Odour threshold: no data available

pH value: at 20 °C, 200 g/L: 4 - 7

Melting point/freezing point: -96 °C

Initial boiling point and boiling range: 120 °C (OECD 103)

Flash point/flash point range: 31 - 32 °C

Evaporation rate: no data available

Flammability: Flammable liquid and vapour.

Explosion limits: LEL (Lower Explosion Limit): 1.70 Vol-%  
UEL (Upper Explosive Limit): 13.10 Vol-%

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No 2015/830



## E-Beam Resists AR-BR 5400

Revision date: 24/2/2016

Version: 7

Language: en-GB,IE

Date of print: 24/2/2016

Page: 6 of 11

|   |  |
|---|--|
| Vapour pressure:                        | at 20 °C: 12 hPa   |
| Vapour density:                         | no data available  |
| Density:                                | at 20 °C: 0.921 g/mL<br>at 25 °C: 0.916 g/mL                                 |
| Water solubility:                       | at 20 °C: no miscible  |
| Partition coefficient: n-octanol/water: | -0.437 log P(o/w)<br>Bio-accumulation is not to be expected (log P(o/w) <1). |
| Auto-ignition temperature:              | no data available  |
| Thermal decomposition:                  | no data available  |
| Viscosity, dynamic:                     | at 20 °C: 1.7 mPa*s  |
| Explosive properties:                   | On contact with air, potentially explosive mixtures may develop.             |
| Oxidizing characteristics:              | no data available  |

### 9.2 Other information

|                         |   |
|-------------------------|---|
| Ignition temperature:   | 287 °C (EU A.15)  |
| Refraction index:       | at 20 °C: 1.404   |
| Additional information: | Molar mass: 90.12 g/mol<br>Relative vapour density at 20 °C (air=1): 3.11<br>Solvent contents: 100% |

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

Flammable liquid and vapour.

### 10.2 Chemical stability

Hygroscopic.  
Stable under recommended storage conditions.

### 10.3 Possibility of hazardous reactions

On contact with air, potentially explosive mixtures may develop.

### 10.4 Conditions to avoid

heating. Keep away from sources of ignition. Take precautionary measures against static discharges.

### 10.5 Incompatible materials

Strong acids, strong bases, strong oxidizing agents

### 10.6 Hazardous decomposition products

In case of fire may be liberated: Carbon monoxide and carbon dioxide.

Thermal decomposition: no data available

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No 2015/830



## E-Beam Resists AR-BR 5400

Revision date: 24/2/2016

Version: 7

Language: en-GB,IE

Date of print: 24/2/2016

Page: 7 of 11

### SECTION 11: Toxicological information

#### 11.1 Information on toxicological effects

Acute toxicity:

LD50 Rat, oral: 4016 mg/kg

LC50 Rat, inhalative: > 6 mg/L /4h

LD50 Rabbit, dermal: > 10000 mg/kg

Toxicological effects:

Acute toxicity (oral): =

Acute toxicity (dermal): Based on available data, the classification criteria are not met.

Acute toxicity (inhalative): Based on available data, the classification criteria are not met.

Skin corrosion/irritation: Based on available data, the classification criteria are not met.

Specific symptoms in animal studies, rabbit: (in-vivo): Not an irritant (EU B.4)

Eye damage/irritation: Based on available data, the classification criteria are not met.

Specific symptoms in animal studies, rabbit: (in-vivo): Not an irritant (EU B.5)

Sensitisation to the respiratory tract: Lack of data.

Skin sensitisation: Based on available data, the classification criteria are not met.

Specific symptoms in animal studies, guinea pig (in-vivo): not sensitising (EU B.6)

Germ cell mutagenicity/Genotoxicity: Based on available data, the classification criteria are not met. In-vitro:

Gene-mutations mammalian cells: negative (OECD 476).

Chromosomal aberrations mammalian cells: negative (OECD 473).

Bacterial mutagenicity: negative (Ames test, OECD 471) .

In-vivo:

Micronucleus test: negative (OECD 474).

Carcinogenicity: Based on available data, the classification criteria are not met.

NOAEL (inhalative), Mouse (male/female): 1000 ppm (OECD 453)

NOAEL (inhalative), rat (male/female): 300 ppm (OECD 453)

Reproductive toxicity: Based on available data, the classification criteria are not met.

Reproduction toxicity: NOAEL (inhalative), rat (male/female): 300 ppm (OECD 416)

Developmental toxicity: NOAEC (inhalative), rat (male/female): 1500 ppm (OECD 414)

Effects on or via lactation: Lack of data.

Specific target organ toxicity (single exposure): STOT SE 3; H336 = May cause drowsiness or dizziness.

Specific target organ toxicity (repeated exposure): Based on available data, the classification criteria are not met.

NOAEL (oral), rat (male): 919 mg/kg/d (OECD 407)

NOEL (inhalative), rat (male/female): 300 ppm (OECD 453)

NOEAL (inhalative), Rabbit (male/female): >1000 mg/kg/d (OECD 410)

Aspiration hazard: Lack of data.

Other information:

After resorption of toxic quantities: CNS disorders

Toxic effect on liver. Toxic effect on kidneys.

#### Symptoms

In case of inhalation: Vapours are slightly irritating to mucous membranes.

Inhalation of vapours may induce headaches or vomiting.

Narcotic effect in case of higher doses or prolonged exposure.

In case of ingestion: Mucous membrane irritation, vomiting.

After contact with skin: Danger of cutaneous absorption.

After eye contact: May cause irritations.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No 2015/830



## E-Beam Resists AR-BR 5400

Revision date: 24/2/2016  
Version: 7

Language: en-GB,IE

Date of print: 24/2/2016  
Page: 8 of 11

### SECTION 12: Ecological information

#### 12.1 Toxicity

Aquatic toxicity:

- Algae toxicity:  
EC50 Pseudokirchneriella subcapitata (green algae): > 1000 mg/L/7 d.
- Daphnia toxicity:  
LC50 Daphnia magna (Big water flea): 21000 -25900 mg/L/48h.
- Fish toxicity:  
LC50 Leuciscus idus: 4000 - 10000 mg/L/96 h.  
LC50 Pimephales promelas (fathead minnow): 20800 mg/L/96 h.  
LC50 Oncorhynchus mykiss: >1000 mg/L/96 h.  
LC50 S. gairdnerii: >1000 mg/L

#### 12.2. Persistence and degradability

Analytical method: OECD 301E  
Degree of elimination: DOC reduction (28 days) 96%  
Evaluation text: Product is readily biodegradable.

Oxygen demand:

BOD: >60%

Effects in sewage plants: toxicity to microorganisms:  
IC50 activated sludge: >1000 mg/L/3h (OECD 209).

#### 12.3 Bioaccumulative potential

Partition coefficient: n-octanol/water:  
-0.437 log P(o/w)  
Bio-accumulation is not to be expected (log P(o/w) <1).

#### 12.4 Mobility in soil

no data available

#### 12.5 Results of PBT and vPvB assessment

This substance does not meet the PBT/vPvB criteria of REACH, Annex XIII.

#### 12.6 Other adverse effects

General information: Do not allow to enter into ground-water, surface water or drains.

### SECTION 13: Disposal considerations

#### 13.1 Waste treatment methods

##### Product

Waste key number: 07 01 04\* = organic solvents, halogen-free  
\* = Evidence for disposal must be provided.  
Recommendation: Incinerate as hazardous waste according to applicable local, state, and federal regulations.

##### Contaminated packaging

Recommendation: Dispose of waste according to applicable legislation. Handle contaminated packages in the same way as the substance itself. Non-contaminated packages may be recycled.



# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No 2015/830



## E-Beam Resists AR-BR 5400

Revision date: 24/2/2016

Version: 7

Language: en-GB,IE

Date of print: 24/2/2016

Page: 9 of 11

### SECTION 14: Transport information

#### 14.1 UN number

ADR/RID, IMDG, IATA: UN 3092

#### 14.2 UN proper shipping name

ADR/RID, IMDG, IATA: UN 3092, 1-Methoxy-2-propanol solution

#### 14.3 Transport hazard class(es)

ADR/RID: Class 3, Code: F1

IMDG: Class 3, Subrisk -

IATA: Class 3



#### 14.4 Packing group

ADR/RID, IMDG, IATA: III

#### 14.5 Environmental hazards

Marine pollutant: No

#### 14.6 Special precautions for user

##### Land transport (ADR/RID)

Warning board: ADR/RID: Kemmler-number 30, UN number 3092

Hazard label: 3

Limited quantities: 5L

EQ: E1

Contaminated packaging - Instructions: P001 - IBC03 - LP01 - R001

Special provisions for packing together: MP19

Portable tanks - Instructions: T2

Portable tanks - Special provisions: TP1

Tank coding: LGBF

Tunnel restriction code: D/E

##### Sea transport (IMDG)

EmS: F-E, S-D

Special provisions: -

Limited quantities: 5L

EQ: E1

Contaminated packaging - Instructions: P001, LP01

Contaminated packaging - Provisions: -

IBC - Instructions: IBC03

IBC - Provisions: -

Tank instructions - IMO: -

Tank instructions - UN: T2

Tank instructions - Provisions: TP1

Stowage and handling: Category A.

Properties and observations: Colourless liquid. Flashpoint: 29°C to 35°C c.c. Explosive limits: 1,7% to 11,5%. Miscible with water. Reacts with strong oxidizing substances. Irritating to skin, eyes and mucous membranes

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No 2015/830



## E-Beam Resists AR-BR 5400

Revision date: 24/2/2016

Version: 7

Language: en-GB,IE

Date of print: 24/2/2016

Page: 10 of 11

### Air transport (IATA)

|                     |   |
|---------------------|---|
| Hazard:             | Flammable liquid                          |
| EQ:                 | E1  |
| Passenger Ltd.Qty.: | Pack.Instr. Y344 - Max. Net Qty/Pkg. 10 L |
| Passenger:          | Pack.Instr. 355 - Max. Net Qty/Pkg. 60 L  |
| Cargo:              | Pack.Instr. 366 - Max. Net Qty/Pkg. 220 L |
| ERG:                | 3L  |

### 14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

no data available

## SECTION 15: Regulatory information

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

#### National regulations - Great Britain

Hazchem-Code: •2Y

#### National regulations - EC member states

Volatile organic compounds (VOC):

85 % by weight = 783 g/L

#### Labelling of packaging with <= 125mL content



Signal word:

**Warning**

Hazard statements:

H303

May be harmful if swallowed.

H336

May cause drowsiness or dizziness.

Precautionary statements:

P261

Avoid breathing vapours.

P304+P340

IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P312

Call a POISON CENTER/doctor if you feel unwell.

P403+P233

Store in a well-ventilated place. Keep container tightly closed.

P405

Store locked up.

### 15.2 Chemical Safety Assessment

no data available

## SECTION 16: Other information

### Further information

Reason of change: General revision (Regulation (EU) Nr. 2015/830)

Date of first version: 18/8/2010

### Department issuing data sheet

Contact person: see section 1: Dept. responsible for information

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No 2015/830



## E-Beam Resists AR-BR 5400

Revision date: 24/2/2016

Version: 7

Language: en-GB,IE

Date of print: 24/2/2016

Page: 11 of 11

For abbreviations and acronyms, see: ECHA Guidance on information requirements and chemical safety assessment, chapter R.20 (Table of terms and abbreviations).

The information in this data sheet has been established to our best knowledge and was up-to-date at time of revision. It does not represent a guarantee for the properties of the product described in terms of the legal warranty regulations.