

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No 453/2010



## E-Beam Resists AR-P 639, 649 ... 679

Revision date: 23/3/2015

Version: 3

Language: en-GB,IE

Date of print: 21/5/2015

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

#### 1.1 Product identifier

Trade name: E-Beam Resists AR-P 639, 649 ... 679

#### 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](http://www.allresist.de)  
E-mail: [info@allresist.de](mailto: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](mailto: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.  
Eye Dam. 1; H318 Causes serious eye damage.  
STOT SE 3; H335, H336 May cause respiratory irritation. May cause drowsiness or dizziness.  
(EUH066) Repeated exposure may cause skin dryness or cracking.

##### Classification according to Directive 67/548/EEC or 1999/45/EC

R10 Flammable.  
Xi; R41 Risk of serious damage to eyes.  
Xi; R37 Irritating to respiratory system.  
R66 Repeated exposure may cause skin dryness or cracking.  
R67 Vapours may cause drowsiness and dizziness.

#### 2.2 Label elements

##### Labelling (CLP)



Signal word:

**Danger**

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Hazard statements: H226 Flammable liquid and vapour.  
H318 Causes serious eye damage.  
H335 May cause respiratory irritation.  
H336 May cause drowsiness or dizziness.  
EUH066 Repeated exposure may cause skin dryness or cracking.

Precautionary statements: P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
P261 Avoid breathing vapours.  
P280 Wear protective gloves/protective clothing/eye protection.  
P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.  
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P403+P233 Store in a well-ventilated place. Keep container tightly closed.

### Labelling (67/548/EEC or 1999/45/EC)



Xi

irritant

R phrase(s): R 10 Flammable.  
R 37 Irritating to respiratory system.  
R 41 Risk of serious damage to eyes.  
R 66 Repeated exposure may cause skin dryness or cracking.  
R 67 Vapours may cause drowsiness and dizziness.  
S phrase(s): S 16 Keep away from sources of ignition. - No smoking.  
S 23 Do not breathe vapours.  
S 24/25 Avoid contact with skin and eyes.  
S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
S 37/39 Wear suitable gloves and eye/face protection.

### Special labelling

Text for labelling: Contains Ethyl (S)-2-hydroxypropionate (Ethyl lactate).

### 2.3 Other hazards

Vapours can form explosive mixtures with air.

## SECTION 3: Composition / information on ingredients

3.1 Substances: not applicable

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### 3.2 Mixtures

Hazardous ingredients:

Ingredient	Designation	Content	Classification
EC No. 211-694-1 CAS 687-47-8	Ethyl (S)-2- hydroxypropionate (Ethyl lactate)	50 - 75 %	DSD/DPD: R10. Xi; R37. Xi; R41. CLP: Flam. Liq. 3; H226. Eye Dam. 1; H318. STOT SE 3; H335.
EC No. 204-658-1 CAS 123-86-4	n-Butyl acetate	25 - 50 %	DSD/DPD: R10. R66. R67. CLP: Flam. Liq. 3; H226. STOT SE 3; H336. (EUH066).

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

- In case of inhalation: Move victim to fresh air, put at rest and loosen restrictive clothing.  
In case of respiratory difficulties seek medical attention. In case of irregular breathing or respiratory arrest provide artificial respiration.
- Following skin contact: Remove residues with water. Change contaminated clothing. In case of skin reactions, consult a physician.
- After eye contact: Immediately flush eyes with plenty of flowing water for 10 to 15 minutes holding eyelids apart. Subsequently seek the immediate attention of an ophthalmologist.
- After swallowing: Rinse mouth immediately and drink plenty of water.  
Avoid vomiting. Seek medical attention.

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

- Cough, nausea, vomiting, pain, Dizziness, shortage of breath.  
After resorption: Narcosis, breathing paralysis, unconsciousness.  
In case of inhalation: Mucous membrane irritation, cough, shortage of breath.  
In case of ingestion:  
Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract.  
After contact with skin: Repeated exposure may cause skin dryness or cracking.  
Mild irritant. Danger of cutaneous absorption.  
After eye contact: Reddening, pain.

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

- Treat symptomatically. Decontamination.  
In the event of pulmonary irritation treat initially with dexamethasone - dosing aerosol.  
Subsequent observance for pneumonia and lung oedema.

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

Suitable extinguishing media:

- foam, extinguishing powder, carbon dioxide.  
In case of large fires: Water fog or alcohol resistant foam.

Extinguishing media which must not be used for safety reasons:

- High power water jet

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

Flammable liquid and vapour. The vapours of the product are heavier than air. Explosive mixtures with air may even form at room temperature. Beware of reignition. 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. To avoid contact with skin, keep safety distance and wear suitable protective clothing.

Additional information:

Hazchem-Code: •3Y

Move container away or cool with water from a protected position. 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

Avoid contact with the substance. Wear suitable protective clothing. Remove all sources of ignition. Do not breathe vapour/aerosol. Ensure adequate ventilation, especially in confined areas.

### 6.2 Environmental precautions

Do not allow to penetrate into soil, waterbodies or drains. Danger of explosion! If necessary notify appropriate authorities.

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

Soak up with absorbent materials such as sand, siliceous earth, acid- or universal binder. Store in special closed containers and dispose of according to ordinance. Final cleaning.

### 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: Avoid contact with skin, eyes, and clothing. Do not breathe vapour/aerosol.

Make sure there is sufficient air exchange and / or that working rooms are air suctioned. Provide room air exhaust at ground level. Concentrated vapours are heavier than air.

Precautions against fire and explosion:

Keep away from sources of ignition. - No smoking. Take precautionary measures against static discharges. Vapours can form explosive mixtures with air.

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

Requirements for storerooms and containers:

Keep container tightly closed in a cool, well-ventilated place. Keep away from sources of ignition and heat. Storage temperature 10-22 °C.

Hints on joint storage:

Do not store together with strong oxidizing agents.

Storage class:

3 = Flammable liquids

### 7.3 Specific end use(s)

No information available.

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### SECTION 8: Exposure controls/personal protection

#### 8.1 Control parameters

Occupational exposure limit values:

CAS No.	Designation	Type	Limit value
123-86-4	n-Butyl acetate	Great Britain: WEL-STEL	966 mg/m <sup>3</sup> ; 200 ppm
		Great Britain: WEL-TWA	724 mg/m <sup>3</sup> ; 150 ppm
		Ireland: 15 minutes	950 mg/m <sup>3</sup> ; 200 ppm
		Ireland: 8 hours	710 mg/m <sup>3</sup> ; 150 ppm

#### 8.2 Exposure controls

When aerosols and vapours form: Withdraw by suction.

#### 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: PE/EVAL/PE - polyethylene/ethylene-vinyl-alcohol-copolymer/polyethylene.  
Breakthrough time: >480 min.  
Unsuitable materials: Nitrile rubber, butyl caoutchouc (butyl rubber), fluoro rubber.  
Observe glove manufacturer's instructions concerning penetrability and breakthrough time.

Eye protection: Tightly sealed goggles according to EN 166.

Body protection: Wear suitable protective clothing.  
In case of handling larger quantities: Flame-resistant antistatic protective clothing.

General protection and hygiene measures:  
Change contaminated clothing.  
Wash hands before breaks and after work.  
Have eye wash bottle or eye rinse ready at work place.

### SECTION 9: Physical and chemical properties

#### 9.1 Information on basic physical and chemical properties

Appearance:	Form: liquid Colour: colourless
Odour:	mild
Odour threshold:	67.6 mg/m <sup>3</sup>
pH value:	no data available
Melting point/freezing point:	no data available
Initial boiling point and boiling range:	126 °C (n-Butyl acetate)
Flash point/flash point range:	36 °C (c.c.)
Evaporation rate:	no data available
Flammability:	Flammable liquid and vapour.
Explosion limits:	LEL (Lower Explosion Limit): 1.50 Vol-% (Ethyl lactate) UEL (Upper Explosive Limit): 16.40 Vol-% (Ethyl lactate)
Vapour pressure:	at 20 °C: 13 hPa (n-Butyl acetate)
Vapour density:	no data available

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Density:	at 20 °C: 1 g/mL
Solubility:	miscible with most organic solvents
Water solubility:	partially miscible
Partition coefficient: n-octanol/water:	no data available
Auto-ignition temperature:	no data available
Thermal decomposition:	no data available
Viscosity, dynamic:	no data available
Explosive properties:	Vapours can form explosive mixtures with air.
Oxidizing characteristics:	no data available

### 9.2 Other information

Ignition temperature: 370 °C (n-Butyl acetate)

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

Sensitive to air, hydrolyzed with water.  
Flammable liquid and vapour. Vapours can form explosive mixtures with air.

### 10.2 Chemical stability

Product is stable under normal storage conditions.

### 10.3 Possibility of hazardous reactions

Reacts with strong oxidizing agents.

### 10.4 Conditions to avoid

Keep away from heat sources, sparks and open flames.

### 10.5 Incompatible materials

various plastics

### 10.6 Hazardous decomposition products

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

Thermal decomposition: no data available

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### SECTION 11: Toxicological information

#### 11.1 Information on toxicological effects

Toxicological effects: Acute toxicity (oral): Lack of data.  
Acute toxicity (dermal): Lack of data.  
Acute toxicity (inhalative): Lack of data.  
Skin corrosion/irritation: Lack of data.  
Eye damage/irritation: Eye Dam. 1; H318 = Causes serious eye damage.  
Sensitisation to the respiratory tract: Lack of data.  
Skin sensitisation: Lack of data.  
Germ cell mutagenicity/Genotoxicity: Lack of data.  
Carcinogenicity: Lack of data.  
Reproductive toxicity: Lack of data.  
Effects on or via lactation: Lack of data.  
Specific target organ toxicity (single exposure): STOT SE 3; H335, H336 = May cause respiratory irritation. May cause drowsiness or dizziness.  
Specific target organ toxicity (repeated exposure): Lack of data.  
Aspiration hazard: Lack of data.

Other information: Information about Ethyl (S)-2-hydroxypropionate/Ethyl lactate:  
LD50 Rat, oral: > 2000 mg/kg.  
LC50 Rat, inhalative: > 5.4 mg/L/4h.  
Information about n-Butyl acetate  
LD50 Rat, oral: >10000 mg/kg.  
LD50 Rabbit, dermal: > 14000 mg/kg.  
LC50 Rat, inhalative: > 21 mg/L/4h.

#### Symptoms

Cough, nausea, vomiting, pain, Dizziness, shortage of breath.  
After resorption: Narcosis, breathing paralysis, unconsciousness.  
In case of inhalation: Mucous membrane irritation, cough, shortage of breath.  
In case of ingestion:  
Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract.  
After contact with skin: Repeated exposure may cause skin dryness or cracking.  
Mild irritant. Danger of cutaneous absorption.  
After eye contact: Reddening, pain.

### SECTION 12: Ecological information

#### 12.1 Toxicity

Aquatic toxicity: Information about Ethyl (S)-2-hydroxypropionate/Ethyl lactate:  
Algae toxicity:  
IC50 Scenedesmus capricornutum: 2200 mg/L/70h.  
Daphnia toxicity:  
EC50 Daphnia magna (Big water flea): 683 mg/L/48h.  
Fish toxicity:  
LC50 Brachydanio rerio (zebra-fish) 320 mg/L/96h.

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### 12.2. Persistence and degradability

Further details: Information about Ethyl (S)-2-hydroxypropionate/Ethyl lactate:  
Biodegradation: 86 %/28 d. Easily bio-degradable.  
Information about n-Butyl acetate:  
Biodegradation: 98% /28d. Easily bio-degradable.

### 12.3 Bioaccumulative potential

Partition coefficient: n-octanol/water:  
no data available

### 12.4 Mobility in soil

no data available

### 12.5 Results of PBT and vPvB assessment

no data available

### 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: 16 03 05\* = organic wastes containing dangerous substances  
\* = 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.

## SECTION 14: Transport information

### 14.1 UN number

ADR/RID, IMDG, IATA: UN 1993

### 14.2 UN proper shipping name

ADR/RID, IMDG, IATA: UN 1993, FLAMMABLE LIQUID, N.O.S. . (Ethyl lactate, Butyl acetates 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





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### 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 1993  
Hazard label: 3  
Special provisions: 274 601 640E  
Limited quantities: 5 L  
EQ: E1  
Contaminated packaging - Instructions: P001 - IBC03 - LP01 - R001  
Special provisions for packing together: MP19  
Portable tanks - Instructions: T4  
Portable tanks - Special provisions: TP1 TP29  
Tank coding: LGBF  
Tunnel restriction code: D/E

#### Sea transport (IMDG)

EmS: F-E, S-E  
Special provisions: 223, 274, 955  
Limited quantities: 5 L  
EQ: E1  
Contaminated packaging - Instructions: P001, LP01  
Contaminated packaging - Provisions: -  
IBC - Instructions: IBC03  
IBC - Provisions: -  
Tank instructions - IMO: -  
Tank instructions - UN: T4  
Tank instructions - Provisions: TP1, TP29  
Stowage and handling: Category A.  
Properties and observations: -

#### 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  
Special Provisioning: A3  
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: •3Y

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### National regulations - EC member states

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



Signal word:

**Danger**

Hazard statements:

H318

Causes serious eye damage.

H335

May cause respiratory irritation.

H336

May cause drowsiness or dizziness.

EUH066

Repeated exposure may cause skin dryness or cracking.

Precautionary statements:

P261

Avoid breathing vapours.

P280

Wear protective gloves/protective clothing/eye protection.

P305+P351+P338

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P403+P233

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

### 15.2 Chemical Safety Assessment

For this mixture a chemical safety assessment is not required.

## SECTION 16: Other information

### Further information

Wording of the H-phrases under paragraph 2 and 3:

H226 = Flammable liquid and vapour.

H318 = Causes serious eye damage.

H335 = May cause respiratory irritation.

H336 = May cause drowsiness or dizziness.

EUH066 = Repeated exposure may cause skin dryness or cracking.

Wording of the R-phrases under section 2 and 3:

R 10 = Flammable.

R 37 = Irritating to respiratory system.

R 41 = Risk of serious damage to eyes.

R 66 = Repeated exposure may cause skin dryness or cracking.

R 67 = Vapours may cause drowsiness and dizziness.

Reason of change: Changes in section 5, 9-10, 15: General revision

Changes in section 14: IMDG 2015

Date of first version: 20/1/2011

### Department issuing data sheet

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

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.