

SAFETY DATA SHEET

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



E-Beam Resist AR-P 639 + 649 + 669 + 679 series

Material number AR-P 639 + 649 + 669 + 679 series

Revision date: 3/5/2017
Version: 6

Language: en-GB,IE

Date of print: 23/3/2018
Page: 1 of 11

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

1.1 Product identifier

Trade name: E-Beam Resist AR-P 639 + 649 + 669 + 679 series

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.
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.

2.2 Label elements

Labelling (CLP)



Signal word: **Danger**

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.

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Language: en-GB,IE

Date of print: 23/3/2018
Page: 2 of 11

Precautionary statements: P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P261 Avoid breathing vapours/spray.
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.
P310 Immediately call a POISON CENTER/doctor.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.

Special labelling

Text for labelling: Contains Ethyl lactate and n-Butyl acetate

2.3 Other hazards

Potentially explosive mixtures may form if adequate ventilation is not provided.
Inhaling can lead to irritations of the respiratory tract and mucous membrane.
Higher doses may lead to a narcotic effect.
Special danger of slipping by leaking/spilling product.

Results of PBT and vPvB assessment:

No data available

SECTION 3: Composition / information on ingredients

3.1 Substances: not applicable

3.2 Mixtures

Chemical characterisation: Mixture of the substances listed below with non-hazardous additions

Hazardous ingredients:

Ingredient	Designation	Content	Classification
EC No. 211-694-1 CAS 687-47-8	Ethyl lactate	50 - 75 %	Flam. Liq. 3; H226. Eye Dam. 1; H318. STOT SE 3; H335.
REACH 01-2119485493-29-xxxx EC No. 204-658-1 CAS 123-86-4	n-Butyl acetate	25 - 50 %	Flam. Liq. 3; H226. STOT SE 3; H336. (EUH066).

Full text of H- and EUH-statements: see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

General information: IF exposed or concerned: Get medical advice/attention.
If medical advice is needed, have product container or label at hand. First aider: Pay attention to self-protection!
Immediately remove any contaminated clothing, shoes or stockings.

In case of inhalation: Move victim to fresh air, put at rest and loosen restrictive clothing.
If victim is at risk of losing consciousness, position and transport on their side.
In case of irregular breathing or respiratory arrest provide artificial respiration. Seek medical attention.

Following skin contact: Immediately clean with water and soap followed by thorough rinsing. Take off immediately all contaminated clothing and wash it before reuse. In case of skin reactions, consult a physician.

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Revision date: 3/5/2017
Version: 6

Language: en-GB,IE

Date of print: 23/3/2018
Page: 3 of 11

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. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Immediately call a POISON CENTER/doctor.

4.2 Most important symptoms and effects, both acute and delayed

May cause respiratory irritation. May cause drowsiness or dizziness.
Causes serious eye damage. Repeated exposure may cause skin dryness or cracking.

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:

Full water jet

5.2 Special hazards arising from the substance or mixture

Flammable liquid and vapour. With air, vapours form potentially explosive mixtures, which are heavier than air. Vapours are heavier than air and will spread at floor level.
May form dangerous gases and vapours in case of fire.
Furthermore, there may develop: Carbon monoxide and carbon dioxide.

5.3 Advice for firefighters

Special protective equipment for firefighters:

Wear self-contained positive pressure breathing apparatus and full firefighting protective clothing.

Additional information:

Hazchem-Code: •3Y

Heating will lead to pressure increase: Danger of bursting and explosion. Keep containers cool with water spray.

In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

Do not allow fire water to penetrate into surface or ground water.

Fire residuals and contaminated extinguishing water must be disposed of in accordance with the regulations of the local authorities.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Eliminate all ignition sources if safe to do so. If possible, eliminate leakage.
Avoid contact with the substance. Do not breathe vapour/aerosol. Ensure adequate ventilation, especially in confined areas.
Wear appropriate protective equipment. Take off contaminated clothing and wash it before reuse. Keep unprotected people away.
Cordon off downwind area at risk and warn inhabitants.

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Material number AR-P 639 + 649 + 669 + 679 series

Revision date: 3/5/2017
Version: 6

Language: en-GB,IE

Date of print: 23/3/2018
Page: 4 of 11

6.2 Environmental precautions

Do not allow to enter into ground-water, surface water or drains.
If necessary notify appropriate authorities.

6.3 Methods and material for containment and cleaning up

Isolate leaked material using non-flammable absorption agent (e.g. sand, earth, vermiculit, diatomaceous earth) and collect it for disposal in appropriate containers in accordance with the local regulations (see section 13). Beware of reignition. Thoroughly clean surrounding area.
In case of greater quantities: Collect mechanically (use only explosion-proof equipment when pumping out).

Additional information: Use explosion-proof equipment and non-sparking tools/utensils.

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. Do not breathe vapour/aerosol.

Do not get in eyes, on skin, or on clothing. Wear appropriate protective equipment. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Take off immediately all contaminated clothing and wash it before reuse. Guarantee sufficient ventilation during and after use, in order to prevent vapour accumulation.

When handling large quantities, supply emergency spray.

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. Use only explosion-protected equipment/instruments. Do not weld. In partially filled containers explosive mixtures may form.

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 container dry. Keep only in the original container.
Protect from heat and direct sunlight. Store containers in upright position.
Storage temperature 10 - 22 °C.

Hints on joint storage:

Do not store together with strong oxidizing agents, strong acids or strong bases.
Keep away from food, drink and animal feedingstuffs.

7.3 Specific end use(s)

No information available.

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Revision date: 3/5/2017
Version: 6

Language: en-GB,IE

Date of print: 23/3/2018
Page: 5 of 11

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: MEL/OES-STEL	966 mg/m ³ ; 200 ppm
		Great Britain: MEL/OES-TWA	724 mg/m ³ ; 150 ppm
		Ireland: 15 minutes	950 mg/m ³ ; 200 ppm
		Ireland: 8 hours	710 mg/m ³ ; 150 ppm

8.2 Exposure controls

Provide for good ventilation or exhaust system or work with completely self-contained equipment. Explosion protection required.

Personal protection equipment

Occupational exposure controls

- Respiratory protection: When aerosols and vapours form: Use appropriate 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 - Layer thickness: 0.5 mm. 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:
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Do not breathe vapour/aerosol. Do not get in eyes, on skin, or on clothing. Take off contaminated clothing and wash it before reuse.
When using do not eat or drink. Wash hands thoroughly after handling.
When handling large quantities, supply emergency spray.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

- Appearance: Physical state at 20 °C and 101.3 kPa: liquid
Colour: colourless
- Odour: mild
- Odour threshold: 67.6 mg/m³
- 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.

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Revision date: 3/5/2017
Version: 6

Language: en-GB,IE

Date of print: 23/3/2018
Page: 6 of 11

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: 15 hPa (n-Butyl acetate)
Vapour density:	No data available
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
Decomposition temperature:	No data available
Viscosity, kinematic:	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

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

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

Heating will lead to pressure increase: Danger of bursting and explosion.
Reacts with strong oxidizing agents.

10.4 Conditions to avoid

Keep away from heat sources, sparks and open flames.
Protect against direct sunlight.

10.5 Incompatible materials

Strong oxidizing agents, strong acids, strong bases, various plastics

10.6 Hazardous decomposition products

No hazardous decomposition products when regulations for storage and handling are observed.

Thermal decomposition: No data available

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Revision date: 3/5/2017
Version: 6

Language: en-GB,IE

Date of print: 23/3/2018
Page: 7 of 11

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Toxicological effects: The statements are derived from the properties of the single components. No toxicological data is available for the product as such.
Acute toxicity (oral): Lack of data.
ATEmix (calculated): 2000 mg/kg < ATE <= 5000 mg/kg.
Acute toxicity (dermal): Lack of data.
ATEmix (calculated): 2000 mg/kg < ATE <= 5000 mg/kg.
Acute toxicity (inhalative): Lack of data.
ATEmix (calculated): ATE > 20 mg/L.
Skin corrosion/irritation: Lack of data.
Serious 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 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.

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Revision date: 3/5/2017
Version: 6

Language: en-GB,IE

Date of print: 23/3/2018
Page: 8 of 11

SECTION 12: Ecological information

12.1 Toxicity

Aquatic toxicity: Information about 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.
Information about n-Butyl acetate:
Algae toxicity:
EC50 Desmodesmus subspicatus (green algae): 647.7 mg/L/72h.
Daphnia toxicity:
EC50 Daphnia magna (Big water flea): 44 mg/L/48 h.
Fish toxicity:
LC50 Pimephales promelas (fathead minnow): 18 mg/L/96h.

12.2 Persistence and degradability

Further details: Biodegradability:
Information about Ethyl lactate: 86 % /28 d. Easily bio-degradable.
Information about n-Butyl acetate: 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 hazardous 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.

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Revision date: 3/5/2017
Version: 6

Language: en-GB,IE

Date of print: 23/3/2018
Page: 9 of 11

SECTION 14: Transport information

14.1 UN number

ADR/RID, IMDG, IATA-DGR:
UN 1993

14.2 UN proper shipping name

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

14.3 Transport hazard class(es)

ADR/RID: Class 3, Code: F1
IMDG: Class 3, Subrisk -
IATA-DGR: Class 3



14.4 Packing group

ADR/RID, IMDG, IATA-DGR:
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 UN 1993
Hazard label: 3
Special provisions: 274 601
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
Excepted quantities: 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: -
Segregation group: none

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Revision date: 3/5/2017
Version: 6

Language: en-GB,IE

Date of print: 23/3/2018
Page: 10 of 11

Air transport (IATA)

Hazard label:	Flamm. liquid
Excepted Quantity Code:	E1
Passenger and Cargo Aircraft: Ltd.Qty.:	Pack.Instr. Y344 - Max. Net Qty/Pkg. 10 L
Passenger and Cargo Aircraft:	Pack.Instr. 355 - Max. Net Qty/Pkg. 60 L
Cargo Aircraft only:	Pack.Instr. 366 - Max. Net Qty/Pkg. 220 L
Special provisions:	A3
Emergency Response Guide-Code (ERG):	3L

14.7 Transport in bulk according to Annex II of Marpol 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
No data available

National regulations - EC member states

Volatile organic compounds (VOC):
approx. 94 % by weight = 940 g/L

Labelling of packaging with <= 125mL content



Signal word:	Danger
Hazard statements:	H318 Causes serious eye damage. EUH066 Repeated exposure may cause skin dryness or cracking.
Precautionary statements:	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. P310 Immediately call a POISON CENTER/doctor.

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.

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Revision date: 3/5/2017

Version: 6

Language: en-GB,IE

Date of print: 23/3/2018

Page: 11 of 11

Reason of change: Changes in section 2: Labelling
Changes in section 3: Composition / information on ingredients
General revision

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.

