

Safety data sheet

according to Regulation (EC) No 1907/2006, Article 31

Printing date 03.04.2024

Version number 2

Revision: 03.04.2024

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

· **1.1 Product identifier**

· **Trade name:** UniLOR® N Series Resists

· **Article number:** T211132, T211128, T211122

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

· **Sector of Use** SU16 Manufacture of computer, electronic and optical products, electrical equipment

· **Product category** PC30 Photo-chemicals

· **Application of the substance / the mixture** Photoresist

· **1.3 Details of the supplier of the safety data sheet**

· **Manufacturer/Supplier:**

Manufacturer:

Kayaku Advanced Materials

200 Flanders Road

Westborough, MA 01581

Telephone: (617) 965-5511

Fax: (617) 965-5818

Importer:

A-Gas Electronic Materials

Unit 3, IO Centre

Swift Valley

Rugby, Warwickshire

CV21 1TW, UK

Tel: +44-0-1788-537535

Fax: +44-0-1788-535835

Website: www.agasem.com

Email: customerservice.em@agas.com

· **Further information obtainable from:**

Product Safety

Email: productsafety@kayakuam.com

· **1.4 Emergency telephone number:**

Kayaku Advanced Materials : 617-965-5511

Chemtrec USA Emergency : 800-424-9300 (24 hr)

Chemtrec International Emergency : 703-527-3887 (24 hr)

SECTION 2: Hazards identification

· **2.1 Classification of the substance or mixture**

· **Classification according to Regulation (EC) No 1272/2008**



flame

Flam. Liq. 3 H226

Flammable liquid and vapour.



health hazard

Repr. 1A H360-H362 May damage fertility or the unborn child. May cause harm to breast-fed children.

STOT RE 2 H373 May cause damage to organs through prolonged or repeated exposure.

(Contd. on page 2)

Safety data sheet

according to Regulation (EC) No 1907/2006, Article 31

Printing date 03.04.2024

Version number 2

Revision: 03.04.2024

Trade name: UniLOR® N Series Resists

(Contd. of page 1)



corrosion

Eye Dam. 1 H318

Causes serious eye damage.



STOT SE 3 H336

May cause drowsiness or dizziness.

· 2.2 Label elements

· Labelling according to Regulation (EC) No 1272/2008

The product is classified and labelled according to the GB CLP regulation.

· Hazard pictograms



GHS02

GHS05

GHS07

GHS08

· Signal word Danger

· Hazard-determining components of labelling:

Proprietary Copolymer

1-Methoxy-2-propanol acetate

· Hazard statements

H226 Flammable liquid and vapour.

H318 Causes serious eye damage.

H360-H362 May damage fertility or the unborn child. May cause harm to breast-fed children.

H336 May cause drowsiness or dizziness.

H373 May cause damage to organs through prolonged or repeated exposure.

· Precautionary statements

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.

P263 Avoid contact during pregnancy and while nursing.

P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.

P302+P352 IF ON SKIN: Wash with plenty of soap and water.

P304+P341 IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P333+P313 If skin irritation or rash occurs: Get medical advice/attention.

P337+P313 If eye irritation persists: Get medical advice/attention.

P370+P378 In case of fire: Use to extinguish: Alcohol resistant foam, Fire-extinguishing powder, Carbon dioxide.

P403+P235 Store in a well-ventilated place. Keep cool.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

· Additional information:

4.4 % of the mixture consists of component(s) of unknown toxicity.

(Contd. on page 3)

Safety data sheet

according to Regulation (EC) No 1907/2006, Article 31

Printing date 03.04.2024

Version number 2

Revision: 03.04.2024

Trade name: UniLOR® N Series Resists

(Contd. of page 2)

Contains 4.4 % of components with unknown hazards to the aquatic environment.

Restricted to professional users.

2.3 Other hazards

None of the ingredients are included in the list established in accordance with Article 59(1) for having endocrine disrupting properties.

None of the ingredients are substances identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 (or Commission Regulation (EU) 2018/605.

Results of PBT and vPvB assessment

 • **PBT:** Not applicable.

 • **vPvB:** Not applicable.

SECTION 3: Composition/information on ingredients

3.2 Chemical characterisation: Mixtures

 • **Description:** Mixture of substances listed below with nonhazardous additions.

Dangerous components:

CAS: 108-65-6 EINECS: 203-603-9	1-Methoxy-2-propanol acetate Flam. Liq. 3, H226; STOT SE 3, H336	60-80%
	Proprietary Copolymer Repr. 1A, H360-H362; STOT RE 2, H373; Eye Dam. 1, H318	10-25%
	Amido ether Acute Tox. 4, H302; Eye Irrit. 2, H319	1-5%
CAS: 120-92-3 EINECS: 204-435-9	Cyclopentanone Flam. Liq. 3, H226; Skin Irrit. 2, H315; Eye Irrit. 2, H319	1-5%

 • **Additional information:** For the wording of the listed hazard phrases refer to section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

After inhalation:

Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.

 • **After skin contact:** Immediately wash with water and soap and rinse thoroughly.

After eye contact:

Wash eyes immediately with a large amount of water or normal saline, occasionally lifting upper and lower eye lids until no evidence of chemical remains (about 20 minutes). Remove contact lenses if present and easy to remove. Seek immediate medical attention.

 • **After swallowing:** If symptoms persist consult doctor.

 • **4.2 Most important symptoms and effects, both acute and delayed** No further relevant information available.

 • **4.3 Indication of any immediate medical attention and special treatment needed** Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing agents:

Alcohol resistant foam

Fire-extinguishing powder

(Contd. on page 4)

Safety data sheet

according to Regulation (EC) No 1907/2006, Article 31

Printing date 03.04.2024

Version number 2

Revision: 03.04.2024

Trade name: UniLOR® N Series Resists

(Contd. of page 3)

- Carbon dioxide
- **For safety reasons unsuitable extinguishing agents:** Water with full jet
- **5.2 Special hazards arising from the substance or mixture** No further relevant information available.
- **5.3 Advice for firefighters**
- **Protective equipment:** Wear self-contained respiratory protective device.

SECTION 6: Accidental release measures

- **6.1 Personal precautions, protective equipment and emergency procedures**
 Wear protective equipment. Keep unprotected persons away.
 Keep away from ignition sources.
 Ensure adequate ventilation
- **6.2 Environmental precautions:**
 Dilute with plenty of water.
 Do not allow to enter sewers/ surface or ground water.
- **6.3 Methods and material for containment and cleaning up:**
 Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
 Ensure adequate ventilation.
- **6.4 Reference to other sections**
 See Section 7 for information on safe handling.
 See Section 8 for information on personal protection equipment.
 See Section 13 for disposal information.

SECTION 7: Handling and storage

- **7.1 Precautions for safe handling**
 Ensure good ventilation/exhaust at the workplace.
 Prevent formation of aerosols.
- **Information about fire - and explosion protection:**
 Keep ignition sources away - Do not smoke.
 Protect against electrostatic charges.
- **7.2 Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and containers:** No special requirements.
- **Information about storage in one common storage facility:**
 Do not store together with oxidising and acidic materials.
 Do not store together with alkalis (caustic solutions).
- **Further information about storage conditions:**
 Store in cool, dry conditions in well sealed containers.
 Protect from heat and direct sunlight.
 Store receptacle in a well ventilated area.
- **7.3 Specific end use(s)** No further relevant information available.

SECTION 8: Exposure controls/personal protection

- **8.1 Control parameters**
- **Additional information about design of technical facilities:** No further data; see section 7.

(Contd. on page 5)

Safety data sheet

according to Regulation (EC) No 1907/2006, Article 31

Printing date 03.04.2024

Version number 2

Revision: 03.04.2024

Trade name: UniLOR® N Series Resists

(Contd. of page 4)

Ingredients with limit values that require monitoring at the workplace:
108-65-6 1-Methoxy-2-propanol acetate

 WEL Short-term value: 548 mg/m³, 100 ppm

 Long-term value: 274 mg/m³, 50 ppm

Sk

 · **Additional information:** The lists valid during the making were used as basis.

 · **8.2 Exposure controls**

 · **Personal protective equipment:**

 · **General protective and hygienic measures:** Wash hands before breaks and at the end of work.

 · **Respiratory protection:**

In case of low exposure use cartridge respirator. In case of intensive or longer exposure use self-contained respiratory protective device.

 · **Protection of hands:**


Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

 · **Material of gloves** Nitrile rubber, NBR

 · **Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

 · **Eye protection:**


Tightly sealed goggles

 · **Body protection:** Long-sleeved work clothes

SECTION 9: Physical and chemical properties

 · **9.1 Information on basic physical and chemical properties**

 · **General Information**

 · **Appearance:**

Form: Liquid

Colour: Red-brown

 · **Odour:** Characteristic

 · **Odour threshold:** Not determined.

 · **pH-value:** Not determined.

 · **Change in condition**

Melting point/freezing point: Undetermined.

Initial boiling point and boiling range: 146.4 °C

 · **Flash point:** 46 °C

 · **Flammability (solid, gas):** Not applicable.

 · **Decomposition temperature:** Not determined.

(Contd. on page 6)

Safety data sheet

according to Regulation (EC) No 1907/2006, Article 31

Printing date 03.04.2024

Version number 2

Revision: 03.04.2024

Trade name: UniLOR® N Series Resists

(Contd. of page 5)

· Ignition temperature:	Product is not selfigniting.																				
· Explosive properties:	Product is not explosive. However, formation of explosive air/vapour mixtures are possible.																				
· Explosion limits:																					
Lower:	1.5 Vol %																				
Upper:	10.8 Vol %																				
· Vapour pressure at 20 °C:	5 hPa																				
· Density:	See Other information																				
· Vapour density	Not determined.																				
· Evaporation rate	Not determined.																				
· Solubility in / Miscibility with water:	Insoluble.																				
· Partition coefficient: n-octanol/water:	Not determined.																				
· Viscosity:																					
Dynamic:	Not determined.																				
Kinematic:	Not determined.																				
· 9.2 Other information	<table><tr><td>Name</td><td>Number</td><td>Sp. Grav.</td><td>Vol.(%by wt.)</td><td>VOC(g/L)</td></tr><tr><td>N1.5</td><td>T211122</td><td>1.01</td><td>78</td><td>785</td></tr><tr><td>N2.5</td><td>T211128</td><td>1.02</td><td>71</td><td>730</td></tr><tr><td>N3.5</td><td>T211132</td><td>1.03</td><td>67</td><td>695</td></tr></table>	Name	Number	Sp. Grav.	Vol.(%by wt.)	VOC(g/L)	N1.5	T211122	1.01	78	785	N2.5	T211128	1.02	71	730	N3.5	T211132	1.03	67	695
Name	Number	Sp. Grav.	Vol.(%by wt.)	VOC(g/L)																	
N1.5	T211122	1.01	78	785																	
N2.5	T211128	1.02	71	730																	
N3.5	T211132	1.03	67	695																	

SECTION 10: Stability and reactivity

- **10.1 Reactivity** No further relevant information available.
- **10.2 Chemical stability** Stable
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **10.3 Possibility of hazardous reactions** No dangerous reactions known.
- **10.4 Conditions to avoid**
 Contact with incompatible materials.
 Heat, flames and sparks. Extremes of temperature and direct sunlight.
- **10.5 Incompatible materials:** Strong Oxidizing Agents, Strong Acids, Strong Bases
- **10.6 Hazardous decomposition products:**
 Carbon monoxide and carbon dioxide
 Nitrogen oxides (NOx)
 Amines
 Toxic gases / vapors

SECTION 11: Toxicological information

- **11.1 Information on toxicological effects**
- **Acute toxicity** Based on available data, the classification criteria are not met.

· LD/LC50 values relevant for classification:		
120-92-3 Cyclopentanone		
Oral	LD50	1,820 mg/kg (Rat)

(Contd. on page 7)

Safety data sheet

according to Regulation (EC) No 1907/2006, Article 31

Printing date 03.04.2024

Version number 2

Revision: 03.04.2024

Trade name: UniLOR® N Series Resists

(Contd. of page 6)

Dermal	LD50	>2,000 mg/kg (rabbit)
Inhalative	LC50/4 h	19.5 mg/l (Rat)
108-65-6 1-Methoxy-2-propanol acetate		
Oral	LD50	8,532 mg/kg (Rat)
Dermal	LD50	>5,000 mg/kg (Rat)
Inhalative	LC50/6 h	4,345 ppm (Rat)

- **Primary irritant effect:**
- **Skin corrosion/irritation** Based on available data, the classification criteria are not met.
- **Serious eye damage/irritation**
Causes serious eye damage.
- **Respiratory or skin sensitisation** Based on available data, the classification criteria are not met.
- **Experience with humans:** Target Organs: Central nervous system, kidney, liver, lungs
- **Additional toxicological information:**
- **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**
- **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
- **Carcinogenicity** Based on available data, the classification criteria are not met.
- **Reproductive toxicity**
May damage fertility or the unborn child. May cause harm to breast-fed children.
- **STOT-single exposure**
May cause drowsiness or dizziness.
- **STOT-repeated exposure**
May cause damage to organs through prolonged or repeated exposure.
- **Aspiration hazard** Based on available data, the classification criteria are not met.

SECTION 12: Ecological information

- **12.1 Toxicity**
- **Aquatic toxicity:** No further relevant information available.
- **12.2 Persistence and degradability** No further relevant information available.
- **12.3 Bioaccumulative potential** No further relevant information available.
- **12.4 Mobility in soil** No further relevant information available.
- **Additional ecological information:**
- **General notes:**
Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
- **12.5 Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **12.6 Other adverse effects** No further relevant information available.

SECTION 13: Disposal considerations

- **13.1 Waste treatment methods**
- **Recommendation**
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
- **Uncleaned packaging:**
- **Recommendation:** Disposal must be made according to official regulations.

(Contd. on page 8)

Safety data sheet

according to Regulation (EC) No 1907/2006, Article 31

Printing date 03.04.2024

Version number 2

Revision: 03.04.2024

Trade name: UniLOR® N Series Resists

(Contd. of page 7)

 · **Recommended cleansing agents:** Water, if necessary together with cleansing agents.

SECTION 14: Transport information

 · **14.1 UN-Number**
 · **ADR, IMDG, IATA** UN1866

 · **14.2 UN proper shipping name**
 · **ADR, IMDG, IATA** RESIN SOLUTION

 · **14.3 Transport hazard class(es)**
 · **ADR, IMDG, IATA**

 · **Class** 3 Flammable liquids.
 · **Label** 3

 · **14.4 Packing group**
 · **ADR, IMDG, IATA** III

 · **14.5 Environmental hazards:** Not applicable.

 · **14.6 Special precautions for user** Warning: Flammable liquids.
 · **Hazard identification number (Kemler code):** 30
 · **EMS Number:** F-E,S-E
 · **Stowage Category** A

 · **14.7 Transport in bulk according to Annex II of Marpol and the IBC Code** Not applicable.

 · **Transport/Additional information:**

 · **ADR**
 · **Limited quantities (LQ)** 5L
 · **Excepted quantities (EQ)** Code: E1
Maximum net quantity per inner packaging: 30 ml
Maximum net quantity per outer packaging: 1000 ml
 · **Transport category** 3
 · **Tunnel restriction code** D/E

 · **IMDG**
 · **Limited quantities (LQ)** 5L
 · **Excepted quantities (EQ)** Code: E1
Maximum net quantity per inner packaging: 30 ml
Maximum net quantity per outer packaging: 1000 ml

 · **UN "Model Regulation":** UN 1866 RESIN SOLUTION, 3, III

GB

(Contd. on page 9)

Safety data sheet
according to Regulation (EC) No 1907/2006, Article 31

Printing date 03.04.2024

Version number 2

Revision: 03.04.2024

Trade name: UniLOR® N Series Resists

(Contd. of page 8)

SECTION 15: Regulatory information

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **Directive 2012/18/EU**
- **Named dangerous substances - ANNEX I** None of the ingredients is listed.
- **Seveso category P5c** FLAMMABLE LIQUIDS
- **Qualifying quantity (tonnes) for the application of lower-tier requirements** 5.000 t
- **Qualifying quantity (tonnes) for the application of upper-tier requirements** 50.000 t
- **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· Relevant phrases*H226 Flammable liquid and vapour.**H302 Harmful if swallowed.**H315 Causes skin irritation.**H318 Causes serious eye damage.**H319 Causes serious eye irritation.**H336 May cause drowsiness or dizziness.**H360 May damage fertility or the unborn child.**H362 May cause harm to breast-fed children.**H373 May cause damage to organs through prolonged or repeated exposure.***· Department issuing SDS:** Product safety department**· Contact:** Tom Cole, EHS Manager (tcole@kayakuam.com)**· Abbreviations and acronyms:***ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)**IMDG: International Maritime Code for Dangerous Goods**IATA: International Air Transport Association**GHS: Globally Harmonised System of Classification and Labelling of Chemicals**EINECS: European Inventory of Existing Commercial Chemical Substances**ELINCS: European List of Notified Chemical Substances**CAS: Chemical Abstracts Service (division of the American Chemical Society)**LC50: Lethal concentration, 50 percent**LD50: Lethal dose, 50 percent**PBT: Persistent, Bioaccumulative and Toxic**vPvB: very Persistent and very Bioaccumulative**Flam. Liq. 3: Flammable liquids – Category 3**Acute Tox. 4: Acute toxicity – Category 4**Skin Irrit. 2: Skin corrosion/irritation – Category 2**Eye Dam. 1: Serious eye damage/eye irritation – Category 1**Eye Irrit. 2: Serious eye damage/eye irritation – Category 2**Repr. 1A: Reproductive toxicity – Category 1A**STOT SE 3: Specific target organ toxicity (single exposure) – Category 3**STOT RE 2: Specific target organ toxicity (repeated exposure) – Category 2*