

Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 24.05.2023

Version number 1

Revision: 24.05.2023

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:**

Kayaku Advanced Materials, Inc.

200 Flanders Road

Westborough, MA 01581

Tel: (617) 965-5511

Fax: (617) 965-5818

The person responsible in EU Member State:

ONLY REPRESENTATIVE

Lionel Marcélis, PhD

President

REACH NATION SRL

22 Rue Notre Dame au Bois

1440 Braine-le-Château

BELGIUM

Tel : +32491880259

*Only Representative for 2-methoxy-1-methylethyl acetate (CAS 108-65-6) only. Other substances are being supported under REACH by Only Representatives of Non-European suppliers and others may be exempt from registration.

· 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**



GHS02 flame

Flam. Liq. 3 H226 Flammable liquid and vapour.



GHS07

STOT SE 3 H336 May cause drowsiness or dizziness.

(Contd. on page 2)

Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 24.05.2023

Version number 1

Revision: 24.05.2023

Trade name: UniLOR® N Series Resists

(Contd. of page 1)

· 2.2 Label elements

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

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

· Hazard pictograms



GHS02 GHS07

· Signal word Warning

· Hazard-determining components of labelling:

1-Methoxy-2-propanol acetate

· Hazard statements

H226 Flammable liquid and vapour.

H336 May cause drowsiness or dizziness.

· 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.

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.

P332+P313 If skin irritation 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.

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

· 2.3 Other hazards

· Results of PBT and vPvB assessment

· **PBT:** Not applicable.

· **vPvB:** Not applicable.

· Determination of endocrine-disrupting properties

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.

EU

(Contd. on page 3)

Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 24.05.2023

Version number 1

Revision: 24.05.2023

Trade name: UniLOR® N Series Resists

(Contd. of page 2)

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Description: Mixture of substances listed below with nonhazardous additions.

Dangerous components:

CAS: 108-65-6 EINECS: 203-603-9 Index number: 607-195-00-7 Reg.nr.: 01-2119475791-29-0050	1-Methoxy-2-propanol acetate Flam. Liq. 3, H226; STOT SE 3, H336	60-80%
	Amido ether Acute Tox. 4, H302; Eye Irrit. 2, H319	1-5%
CAS: 120-92-3 EINECS: 204-435-9 Index number: 606-025-00-9 Reg.nr.: 01-2119495595-21-0000	Cyclopentanone Flam. Liq. 3, H226; Skin Irrit. 2, H315; Eye Irrit. 2, H319	1-5%

Additional Components:

Proprietary Copolymer	Repr. 1A, H360-H362; STOT RE 2, H373; Eye Dam. 1, H318	10-25%
-----------------------	--	--------

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

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.

(Contd. on page 4)

Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 24.05.2023

Version number 1

Revision: 24.05.2023

Trade name: UniLOR® N Series Resists

(Contd. of page 3)

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**

· **Ingredients with limit values that require monitoring at the workplace:**

108-65-6 1-Methoxy-2-propanol acetate

IOELV	Short-term value: 550 mg/m ³ , 100 ppm
	Long-term value: 275 mg/m ³ , 50 ppm
	Skin

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

· **8.2 Exposure controls**

· **Appropriate engineering controls** No further data; see section 7.

(Contd. on page 5)

Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 24.05.2023

Version number 1

Revision: 24.05.2023

Trade name: UniLOR® N Series Resists

(Contd. of page 4)

- **Individual protection measures, such as 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.
- **Hand protection**



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/face 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

· Physical state	Liquid
· Colour:	Red-brown
· Odour:	Characteristic
· Odour threshold:	Not determined.
· Melting point/freezing point:	Undetermined.
· Boiling point or initial boiling point and boiling range	146.4 °C (108-65-6 1-Methoxy-2-propanol acetate)
· Flammability	Not applicable.
· Lower and upper explosion limit	
· Lower:	1.5 Vol % (108-65-6 1-Methoxy-2-propanol acetate)
· Upper:	10.8 Vol % (108-65-6 1-Methoxy-2-propanol acetate)
· Flash point:	46 °C (108-65-6 1-Methoxy-2-propanol acetate)
· Decomposition temperature:	Not determined.
· pH	Not determined.
· Viscosity:	
· Kinematic viscosity	Not determined.
· Dynamic:	Not determined.
· Solubility	
· water:	Insoluble.
· Partition coefficient n-octanol/water (log value)	Not determined.
· Vapour pressure at 20 °C:	5 hPa (108-65-6 1-Methoxy-2-propanol acetate)

(Contd. on page 6)

Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 24.05.2023

Version number 1

Revision: 24.05.2023

Trade name: UniLOR® N Series Resists

(Contd. of page 5)

· Density and/or relative density
· Density: See Other information

· Vapour density Not determined.

· 9.2 Other information

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

· Appearance:
· Form: Liquid

· Important information on protection of health and environment, and on safety.
· Ignition temperature: Product is not selfigniting.

· Explosive properties: Product is not explosive. However, formation of explosive air/vapour mixtures are possible.

· Change in condition
· Evaporation rate Not determined.

· Information with regard to physical hazard classes
· Explosives Void

· Flammable gases Void

· Aerosols Void

· Oxidising gases Void

· Gases under pressure Void

· Flammable liquids Flammable liquid and vapour.

· Flammable solids Void

· Self-reactive substances and mixtures Void

· Pyrophoric liquids Void

· Pyrophoric solids Void

· Self-heating substances and mixtures Void

· Substances and mixtures, which emit flammable gases in contact with water Void

· Oxidising liquids Void

· Oxidising solids Void

· Organic peroxides Void

· Corrosive to metals Void

· Desensitised explosives Void

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

(Contd. on page 7)

Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 24.05.2023

Version number 1

Revision: 24.05.2023

Trade name: UniLOR® N Series Resists

(Contd. of page 6)

 Nitrogen oxides (NO_x)

Amines

Toxic gases / vapors

SECTION 11: Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity

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

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)
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)

Skin corrosion/irritation

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

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

Serious eye damage/irritation

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

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

Respiratory or skin sensitisation

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

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

Germ cell mutagenicity

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

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

Carcinogenicity

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

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

Reproductive toxicity

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

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

STOT-single exposure

May cause drowsiness or dizziness.

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

STOT-repeated exposure

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

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

Aspiration hazard

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

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

Experience with humans: Target Organs: Central nervous system, kidney, liver, lungs

(Contd. on page 8)

Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 24.05.2023

Version number 1

Revision: 24.05.2023

Trade name: UniLOR® N Series Resists

(Contd. of page 7)

· 11.2 Information on other hazards

· Endocrine disrupting properties

None of the ingredients is listed.

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.

· 12.5 Results of PBT and vPvB assessment

 · **PBT:** Not applicable.

 · **vPvB:** Not applicable.

· 12.6 Endocrine disrupting properties

The product does not contain substances with endocrine disrupting properties.

· 12.7 Other adverse effects

· 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.

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.

Disposal must be made in accordance with International, National, and regional regulations.

· Uncleaned packaging:

 · **Recommendation:** Disposal must be made according to official regulations.

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

SECTION 14: Transport information

· 14.1 UN number or ID 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.

(Contd. on page 9)

Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 24.05.2023

Version number 1

Revision: 24.05.2023

Trade name: UniLOR® N Series Resists

(Contd. of page 8)

· Label	3
· 14.4 Packing group · ADR, IMDG, IATA	III
· 14.5 Environmental hazards:	Not applicable.
· 14.6 Special precautions for user · Hazard identification number (Kemler code): · EMS Number: · Stowage Category	Warning: Flammable liquids. 30 F-E, S-E A
· 14.7 Maritime transport in bulk according to IMO instruments	Not applicable.
· Transport/Additional information:	
· ADR · Limited quantities (LQ) · Excepted quantities (EQ)	5L Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
· Transport category · Tunnel restriction code	3 D/E
· IMDG · Limited quantities (LQ) · Excepted quantities (EQ)	5L 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

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

 · **REGULATION (EC) No 1907/2006 ANNEX XVII** Conditions of restriction: 3

 · **DIRECTIVE 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment – Annex II**

None of the ingredients is listed.

 · **REGULATION (EU) 2019/1148**

 · **Annex I - RESTRICTED EXPLOSIVES PRECURSORS (Upper limit value for the purpose of licensing under Article 5(3))**

None of the ingredients is listed.

 · **Annex II - REPORTABLE EXPLOSIVES PRECURSORS**

None of the ingredients is listed.

(Contd. on page 10)

Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 24.05.2023

Version number 1

Revision: 24.05.2023

Trade name: UniLOR® N Series Resists

(Contd. of page 9)

· Regulation (EC) No 273/2004 on drug precursors

None of the ingredients is listed.

· Regulation (EC) No 111/2005 laying down rules for the monitoring of trade between the Community and third countries in drug precursors

None of the ingredients is listed.

· 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.

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

Art. 9(1) of Regulation (EC) No. 1272/2008 was used for classification purposes.

· Department issuing SDS: Product safety department
· Contact: Tom Cole, EHS Manager (tcole@kayakuam.com)
· Revision History: New SDS.
· 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 Irrit. 2: Serious eye damage/eye irritation – Category 2

STOT SE 3: Specific target organ toxicity (single exposure) – Category 3