Safety data sheet
according to 1907/2006/EC, Article 31

Printing date 21.11.2022 *Version number 4* *Revision: 21.11.2022*

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

· **1.1 Product identifier**

· **Trade name: MicroChem Remover 1112A**

· **Article number:** L320000
· **1.2 Relevant identified uses of the substance or mixture and uses advised against**
No further relevant information available.
· **Sector of Use** SU16 Manufacture of computer, electronic and optical products, electrical equipment
· **Product category** PC21 Laboratory chemicals
· **Application of the substance / the mixture** Photoresist remover

· **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

· **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**

GHS08 health hazard

Carc. 2 H351 Suspected of causing cancer.
STOT RE 2 H373 May cause damage to the central nervous system, the kidneys and the liver through prolonged or repeated exposure.

GHS05 corrosion

Skin Corr. 1B H314 Causes severe skin burns and eye damage.
Eye Dam. 1 H318 Causes serious eye damage.

· **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**

GHS05 GHS08

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· ***Signal word*** *Danger*

· ***Hazard-determining components of labelling:***
Monoethanolamine
Furfuryl alcohol
· ***Hazard statements***
H314 Causes severe skin burns and eye damage.
H351 Suspected of causing cancer.
H373 May cause damage to the central nervous system, the kidneys and the liver through prolonged or repeated exposure.
· ***Precautionary statements***

P210	*Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.*
P260	*Do not breathe 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+P334	*IF ON SKIN: Immerse in cool water or wrap in wet bandages.*
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.*

· ***2.3 Other hazards***
· ***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: 112-34-5 *EINECS: 203-961-6* *Index number: 603-096-00-8*	*Butyl carbitol* *Eye Irrit. 2, H319*	*25-50%*
CAS: 111-76-2 *EINECS: 203-905-0* *Index number: 603-014-00-0*	*Ethylene glycol monobutyl ether* *Acute Tox. 4, H302; Acute Tox. 4, H332; Skin Irrit. 2, H315; Eye Irrit. 2, H319*	*25-50%*
CAS: 141-43-5 *EINECS: 205-483-3* *Index number: 603-030-00-8*	*Monoethanolamine* *Skin Corr. 1B, H314; Acute Tox. 4, H302; Acute Tox. 4, H312; Acute Tox. 4, H332*	*10-25%*
CAS: 34590-94-8 *EINECS: 252-104-2*	*Dipropylene glycol monomethyl ether* *substance with a Community workplace exposure limit*	*10-25%*

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	Proprietary Polyether *Acute Tox. 4, H302*	*5-15%*
CAS: 98-00-0 *EINECS: 202-626-1* *Index number: 603-018-00-2*	*Furfuryl alcohol* *Acute Tox. 3, H331; Carc. 2, H351; STOT RE 2, H373; Acute Tox. 4, H302; Acute Tox. 4, H312; Eye Irrit. 2, H319; STOT SE 3, H335*	*1-5%*

· ***Additional Components:***

CAS: 7732-18-5 *EINECS: 231-791-2*	*Water*	*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***
· ***General information:*** *Immediately remove any clothing soiled by the product.*
· ***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:*** *Call for a doctor immediately.*
· ***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.*

SECTION 6: Accidental release measures

· ***6.1 Personal precautions, protective equipment and emergency procedures***
Wear protective equipment. Keep unprotected persons away.
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).

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Use neutralising agent.
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.
Use explosion-proof apparatus / fittings and spark-proof tools.

· ***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.
· ***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)*** *For Research and Development Use Only*

SECTION 8: Exposure controls/personal protection

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

· ***Ingredients with limit values that require monitoring at the workplace:***	
112-34-5 Butyl carbitol	
IOELV	*Short-term value: 101.2 mg/m³, 15 ppm* *Long-term value: 67.5 mg/m³, 10 ppm*
111-76-2 Ethylene glycol monobutyl ether	
IOELV	*Short-term value: 246 mg/m³, 50 ppm* *Long-term value: 98 mg/m³, 20 ppm* *Skin*
141-43-5 Monoethanolamine	
IOELV	*Short-term value: 7.6 mg/m³, 3 ppm* *Long-term value: 2.5 mg/m³, 1 ppm* *Skin*
34590-94-8 Dipropylene glycol monomethyl ether	
IOELV	*Long-term value: 308 mg/m³, 50 ppm* *Skin*

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

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· ***8.2 Exposure controls***
· ***Personal protective equipment:***
· ***General protective and hygienic measures:***
Keep away from food and beverages.
Immediately remove all soiled and contaminated clothing
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.
· ***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*** *Neoprene gloves*
· ***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:*** *Apron*

SECTION 9: Physical and chemical properties

· ***9.1 Information on basic physical and chemical properties***	
· ***General Information***	
· ***Appearance:***	
Form:	*Fluid*
Colour:	*Light yellow*
· ***Odour:***	*Characteristic*
· ***Odour threshold:***	*Not determined.*
· ***pH-value at 20 °C:***	*>12*
· ***Change in condition***	
Melting point/freezing point:	*Undetermined.*
Initial boiling point and boiling range:	*100 °C*
· ***Flash point:***	*82 °C*
· ***Flammability (solid, gas):***	*Not applicable.*
· ***Ignition temperature:***	*225 °C*
· ***Decomposition temperature:***	*Not determined.*
· ***Auto-ignition temperature:***	*Product is not selfigniting.*

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· **Explosive properties:**	Not determined.
· **Explosion limits:**	
Lower:	0.9 Vol %
Upper:	14.0 Vol %
· **Vapour pressure at 20 °C:**	1.2 hPa
· **Density:**	Not determined.
· **Relative density**	Not determined.
· **Vapour density**	Not determined.
· **Evaporation rate**	Not determined.
· **Solubility in / Miscibility with water:**	Fully miscible.
· **Partition coefficient: n-octanol/water:**	Not determined.
· **Viscosity:**	
Dynamic:	Not determined.
Kinematic:	Not determined.
· **Solvent content:**	
Organic solvents:	88.9 %
Solids content:	6.1 %
· **9.2 Other information**	No further relevant information available.

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**
Heat, flames and sparks. Extremes of temperature and direct sunlight.
Contact with incompatible materials.
· **10.5 Incompatible materials:**
Strong oxidizing agents
Strong acids
· **10.6 Hazardous decomposition products:**
Carbon monoxide and carbon dioxide
Nitrogen oxides (NOx)

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:**		
111-76-2 Ethylene glycol monobutyl ether		
Oral	LD50	1480 mg/kg (Rat)

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Dermal	*LD50*	*400 mg/kg (rab)*
141-43-5 Monoethanolamine		
Oral	*LD50*	*2050 mg/kg (Rat)*
Dermal	*LD50*	*1000 mg/kg (rabbit)*
98-00-0 Furfuryl alcohol		
Oral	*LD50*	*160 mg/kg (mouse)*
Dermal	*LD50*	*400 mg/kg (rabbit)*
111-76-2 Ethylene glycol monobutyl ether		
Oral	*LD50*	*1300 mg/kg (Rat)*
Dermal	*LD50*	*400 mg/kg (rab)*
34590-94-8 Dipropylene glycol monomethyl ether		
Oral	*LD50*	*5135 mg/kg (Rat)*
Dermal	*LD50*	*>19000 mg/kg (rab)*

· ***Primary irritant effect:***
· ***Skin corrosion/irritation***
Causes severe skin burns and eye damage.
· ***Serious eye damage/irritation***
Causes serious eye damage.
· ***Respiratory or skin sensitisation*** *Based on available data, the classification criteria are not met.*
· ***Additional toxicological information:***
· ***CMR effects (carcinogenity, mutagenicity and toxicity for reproduction)***
· ***Germ cell mutagenicity*** *Based on available data, the classification criteria are not met.*
· ***Carcinogenicity***
Suspected of causing cancer.
· ***Reproductive toxicity*** *Based on available data, the classification criteria are not met.*
· ***STOT-single exposure*** *Based on available data, the classification criteria are not met.*
· ***STOT-repeated exposure***
May cause damage to the central nervous system, the kidneys and the liver 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:***	
112-34-5 Butyl carbitol	
ErC50 96 hour	*>100 mg/l (algae)*
LC50/96 h	*1300 mg/l (Lepomis macrochirus (Bluegill))*
111-76-2 Ethylene glycol monobutyl ether	
EC50/48 h	*1550 mg/l (Water flea)*
LC50	*1474 mg/l (rainbow trout (Oncorhynchus mykiss))*
34590-94-8 Dipropylene glycol monomethyl ether	
LC50/48 hr	*1919 mg/L (daphnia magna)*
LC50/96 h	*>1000 mg/l (Poecillia reticulata (guppy))*

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141-43-5 Monoethanolamine	
LC50/96 h	349 mg/l (Cyprinus carpio (common carp))
98-00-0 Furfuryl alcohol	
EC50/24 h	115 mg/l (daphnia magna)
LC50/48 hr	701-1356 mg/L (Leuciscus idus)

· **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.
Must not reach sewage water or drainage ditch undiluted or unneutralised.
· **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.
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**
· **ADR, IMDG, IATA** UN2491

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

· **14.3 Transport hazard class(es)**

· **ADR, IMDG, IATA**

· **Class** 8 Corrosive substances.
· **Label** 8

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

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· **14.5 Environmental hazards:**	
· **Marine pollutant:**	*No*
· **14.6 Special precautions for user**	*Warning: Corrosive substances.*
· **EMS Number:**	*F-A,S-B*
· **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*
· **UN "Model Regulation":**	*UN2491, ETHANOLAMINE SOLUTION, 8, III*

SECTION 15: Regulatory information

· **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
No further relevant information available.

· **Directive 2012/18/EU**
· **REGULATION (EC) No 1907/2006 ANNEX XVII** *Conditions of restriction: 3, 55*
· **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**
H302 Harmful if swallowed.
H312 Harmful in contact with skin.
H314 Causes severe skin burns and eye damage.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H331 Toxic if inhaled.
H332 Harmful if inhaled.
H335 May cause respiratory irritation.
H351 Suspected of causing cancer.
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:**
The manufacturer's information in Section 1, the product hazard information in Section 2 and the component hazard information in Section 3 have been updated.
· **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

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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
Acute Tox. 4: Acute toxicity – Category 4
Acute Tox. 3: Acute toxicity – Category 3
Skin Corr. 1B: Skin corrosion/irritation – Category 1B
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
Carc. 2: Carcinogenicity – Category 2
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3
STOT RE 2: Specific target organ toxicity (repeated exposure) – Category 2