

## Safety Data Sheet

acc. to OSHA HCS

Printing date 02/07/2022

Reviewed on 02/07/2022

### 1 Identification

- **Product identifier**
- **Trade name:** MicroChem Remover 1112A
- **Product number:** L320000
- **Application of the substance / the mixture** Photoresist remover
- **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
- **Information department:**  
 Product Safety  
 Email: [productsafety@kayakuAM.com](mailto:productsafety@kayakuAM.com)
- **Emergency telephone number:**  
 Kayaku Advanced Materials : 617-965-5511  
 Chemtrec USA Emergency : 800-424-9300  
 Chemtrec International Emergency : 703-527-3887

### 2 Hazard(s) identification

- **Classification of the substance or mixture**



GHS08 Health hazard

Carcinogenicity 2

H351 Suspected of causing cancer.

Specific Target Organ Toxicity - Repeated Exposure 2 H373 May cause damage to organs through prolonged or repeated exposure.



GHS05 Corrosion

Skin Corrosion 1B

H314 Causes severe skin burns and eye damage.

Eye Damage 1

H318 Causes serious eye damage.



GHS07

Acute Toxicity - Oral 4

H302 Harmful if swallowed.

Acute Toxicity - Dermal 4

H312 Harmful in contact with skin.

Flammable Liquids 4

H227 Combustible liquid.

- **Label elements**

- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

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**Trade name: MicroChem Remover 1112A**

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**Hazard pictograms**


GHS05 GHS07 GHS08

**Signal word Danger**
**Hazard-determining components of labeling:**

Proprietary solvent blend  
 Monoethanolamine  
 Furfuryl alcohol  
 Proprietary Polyether

**Hazard statements**

H227 Combustible liquid.  
 H302+H312 Harmful if swallowed or in contact with skin.  
 H314 Causes severe skin burns and eye damage.  
 H351 Suspected of causing cancer.  
 H373 May cause damage to organs through prolonged or repeated exposure.

**Precautionary statements**

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.  
 P261 Avoid breathing dust/fume/gas/mist/vapors/spray  
 P280 Wear protective gloves/protective clothing/eye protection/face 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 person to fresh air and keep 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.

**Classification system:**
**NFPA ratings (scale 0 - 4)**


Health = 2  
 Fire = 2  
 Reactivity = 1

**HMIS-ratings (scale 0 - 4)**


Health = \*2  
 Fire = 2  
 Reactivity = 1

**Other hazards**
**Results of PBT and vPvB assessment**

**PBT:** Not applicable.

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 · **vPvB:** Not applicable.

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### 3 Composition/information on ingredients

 · **Chemical characterization:** Mixtures

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

 · **Dangerous components:**

112-34-5	Butyl carbitol ⚠ Eye Irritation 2A, H319	25-50%
	Proprietary solvent blend ⚠ Acute Toxicity - Oral 4, H302; Acute Toxicity - Dermal 4, H312; Acute Toxicity - Inhalation 4, H332; Skin Irritation 2, H315; Eye Irritation 2A, H319; Flammable Liquids 4, H227	25-50%
141-43-5	Monoethanolamine ⚠ Skin Corrosion 1B, H314; ⚠ Acute Toxicity - Oral 4, H302; Acute Toxicity - Dermal 4, H312; Acute Toxicity - Inhalation 4, H332; Flammable Liquids 4, H227	10-25%
34590-94-8	Dipropylene glycol monomethyl ether Flammable Liquids 4, H227	10-25%
	Proprietary Polyether ⚠ Acute Toxicity - Oral 4, H302	5-15%
98-00-0	Furfuryl alcohol ⚠ Acute Toxicity - Inhalation 3, H331; ⚠ Carcinogenicity 2, H351; Specific Target Organ Toxicity - Repeated Exposure 2, H373; ⚠ Acute Toxicity - Oral 4, H302; Acute Toxicity - Dermal 4, H312; Eye Irritation 2A, H319; Specific Target Organ Toxicity - Single Exposure 3, H335; Flammable Liquids 4, H227	1-5%

 · **Additional Components:**

7732-18-5	Water	1-5%
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### 4 First-aid measures

 · **Description of first aid measures**

 · **General information:**

Immediately remove any clothing soiled by the product.

Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

 · **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:**

Do not induce vomiting; immediately call a doctor.

Drink copious amounts of water and provide fresh air. Immediately call a doctor.

 · **Information for doctor:**

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

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

**5 Fire-fighting measures**

- **Extinguishing media**
- **Suitable extinguishing agents:**
  - Alcohol resistant foam*
  - Fire-extinguishing powder*
  - Carbon dioxide*
- **For safety reasons unsuitable extinguishing agents:** *Water with full jet*
- **Special hazards arising from the substance or mixture** *No further relevant information available.*
- **Advice for firefighters**
- **Protective equipment:** *Wear SCBA.*

**6 Accidental release measures**

- **Personal precautions, protective equipment and emergency procedures**
  - Wear protective equipment. Keep unprotected persons away.*
  - Ensure adequate ventilation*
- **Environmental precautions:**
  - Dilute with plenty of water.*
  - Do not allow to enter sewers/ surface or ground water.*
- **Methods and material for containment and cleaning up:**
  - Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).*
  - Use neutralizing agent.*
  - Ensure adequate ventilation.*
- **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.*

**7 Handling and storage**

- **Handling:**
- **Precautions for safe handling**
  - Ensure good ventilation/exhaust at the workplace.*
  - Prevent formation of aerosols.*
- **Information about protection against explosions and fires:**
  - Keep ignition sources away - Do not smoke.*
  - Protect against electrostatic charges.*
  - Use explosion-proof apparatus / fittings and spark-proof tools.*
- **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 oxidizing and acidic materials.*
- **Further information about storage conditions:**
  - Keep container well-sealed in cool, dry location.*
  - Protect from heat and direct sunlight.*

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Store receptacle in a well ventilated area.

 · **Specific end use(s)** For Research and Development Use Only

### 8 Exposure controls/personal protection

 · **Additional information about design of technical systems:** No further data; see item 7.

 · **Control parameters**

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

#### 112-34-5 Butyl carbitol

TLV	Long-term value: 67.5* mg/m <sup>3</sup> , 10* ppm *Inhalable fraction and vapor
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#### Proprietary solvent blend

PEL	Long-term value: 240 mg/m <sup>3</sup> , 50 ppm Skin
REL	Long-term value: 24 mg/m <sup>3</sup> , 5 ppm Skin
TLV	Long-term value: 97 mg/m <sup>3</sup> , 20 ppm BEI

#### 141-43-5 Monoethanolamine

PEL	Long-term value: 6 mg/m <sup>3</sup> , 3 ppm
REL	Short-term value: 15 mg/m <sup>3</sup> , 6 ppm Long-term value: 8 mg/m <sup>3</sup> , 3 ppm
TLV	Short-term value: 15 mg/m <sup>3</sup> , 6 ppm Long-term value: 7.5 mg/m <sup>3</sup> , 3 ppm

#### 34590-94-8 Dipropylene glycol monomethyl ether

PEL	Long-term value: 600 mg/m <sup>3</sup> , 100 ppm Skin
REL	Short-term value: 900 mg/m <sup>3</sup> , 150 ppm Long-term value: 600 mg/m <sup>3</sup> , 100 ppm Skin
TLV	Short-term value: 909 mg/m <sup>3</sup> , 150 ppm Long-term value: 606 mg/m <sup>3</sup> , 100 ppm Skin

#### 98-00-0 Furfuryl alcohol

PEL	Long-term value: 200 mg/m <sup>3</sup> , 50 ppm
REL	Short-term value: 60 mg/m <sup>3</sup> , 15 ppm Long-term value: 40 mg/m <sup>3</sup> , 10 ppm Skin
TLV	Short-term value: 60 mg/m <sup>3</sup> , 15 ppm Long-term value: 40 mg/m <sup>3</sup> , 10 ppm Skin

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**· Ingredients with biological limit values:**
**Proprietary solvent blend**

BEI	200 mg/g creatinine
	Medium: urine
	Time: end of shift
	Parameter: Butoxyacetic acid with hydrolysis

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

**· 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 equipment:**

In case of low exposure, use cartridge respirator. In case of intensive or longer exposure, use SCBA.

**· 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** Contact glove manufacture for break-through time.

**· Eye protection:**


Tightly sealed goggles

**· Body protection:** Apron

### 9 Physical and chemical properties

**· Information on basic physical and chemical properties**
**· General Information**
**· Appearance:**

<b>Form:</b>	Fluid
<b>Color:</b>	Light yellow
<b>· Odor:</b>	Characteristic
<b>· Odor threshold:</b>	Not determined.

**· pH-value at 20 °C (68 °F):** >12

**· Change in condition**

<b>Melting point/Melting range:</b>	Undetermined.
<b>Boiling point/Boiling range:</b>	100 °C (212 °F)

**· Flash point:** 82 °C (179.6 °F)

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· <b>Flammability (solid, gaseous):</b>	Not applicable.
· <b>Ignition temperature:</b>	225 °C (437 °F)
· <b>Decomposition temperature:</b>	Not determined.
· <b>Auto igniting:</b>	Product is not selfigniting.
· <b>Danger of explosion:</b>	Not determined.
· <b>Explosion limits:</b>	
Lower:	0.9 Vol %
Upper:	14.0 Vol %
· <b>Vapor pressure at 20 °C (68 °F):</b>	1.2 hPa (0.9 mm Hg)
· <b>Density:</b>	See other information
· <b>Relative density</b>	Not determined.
· <b>Vapor density</b>	Not determined.
· <b>Evaporation rate</b>	1.6-2.3 (BuAc=1)
· <b>Solubility in / Miscibility with Water:</b>	Fully miscible.
· <b>Partition coefficient (n-octanol/water):</b>	Not determined.
· <b>Viscosity:</b>	
Dynamic:	Not determined.
Kinematic:	Not determined.
· <b>Solvent content:</b>	
Organic solvents:	88.9 %
VOC content:	931.04 g/L
· <b>Solids content:</b>	6.1 %
· <b>Other information</b>	No further relevant information available.

### 10 Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability** Stable
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid**  
Heat, flames and sparks. Extremes of temperature and direct sunlight.  
Contact with incompatible materials.
- **Incompatible materials:**  
Strong oxidizing agents  
Strong acids
- **Hazardous decomposition products:**  
Carbon monoxide and carbon dioxide  
Nitrogen oxides (NOx)

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### 11 Toxicological information

 · **Information on toxicological effects**

 · **Acute toxicity:**

 · **LD/LC50 values that are relevant for classification:**
**Proprietary solvent blend**

Oral	LD50	1480 mg/kg (Rat)
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)

**Proprietary solvent blend**

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:**

 · **on the skin:** Caustic effect on skin and mucous membranes.

 · **on the eye:** Strong caustic effect.

 · **Sensitization:** No sensitizing effects known.

 · **Additional toxicological information:**

The product shows the following dangers according to internally approved calculation methods for preparations:

Harmful

Corrosive

Irritant

Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

 · **Carcinogenic categories**

 · **IARC (International Agency for Research on Cancer)**

Proprietary solvent blend	3
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 · **NTP (National Toxicology Program)**

None of the ingredients are listed.
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 · **OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients are listed.
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### 12 Ecological information

· **Toxicity**

· **Aquatic toxicity:**

**112-34-5 Butyl carbitol**

ErC50 96 hour > 100 mg/l (algae)

LC50/96 h 1300 mg/l (*Lepomis macrochirus* (Bluegill))

**Proprietary solvent blend**

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))

**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*)

· **Persistence and degradability** No further relevant information available.

· **Behavior in environmental systems:**

· **Bioaccumulative potential** No further relevant information available.

· **Mobility in soil** No further relevant information available.

· **Additional ecological information:**

· **General notes:**

Water hazard class 1 (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 bodies of water or drainage ditch undiluted or unneutralized.

· **Results of PBT and vPvB assessment**

· **PBT:** Not applicable.

· **vPvB:** Not applicable.

· **Other adverse effects** No further relevant information available.

### 13 Disposal considerations

· **Waste treatment methods**

· **Recommendation:**

Must not be disposed of as regular garbage/trash. Do not allow product to reach sewage system.

Disposal must be made in accordance with Federal, State, and Local regulations.

· **Uncleaned packagings:**

· **Recommendation:** Disposal must be made in accordance with Federal, State, and Local regulations.

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

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### 14 Transport information

· UN-Number	UN2491
· DOT, ADR, IMDG, IATA	
· UN proper shipping name	Ethanolamine solutions
· DOT, ADR	ETHANOLAMINE SOLUTION
· IMDG, IATA	
· Transport hazard class(es)	
· DOT	
	
· Class	8 Corrosive substances
· Label	8
· ADR, IMDG, IATA	
	
· Class	8 Corrosive substances
· Label	8
· Packing group	
· DOT, ADR, IMDG, IATA	III
· Environmental hazards:	
· Marine pollutant:	No
· Special precautions for user	Warning: Corrosive substances
· EMS Number:	F-A,S-B
· Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
· UN "Model Regulation":	UN2491, Ethanolamine solutions, 8, III

### 15 Regulatory information

· Safety, health and environmental regulations/legislation specific for the substance or mixture
· Sara
· Section 355 (extremely hazardous substances):
None of the ingredients are listed.
· Section 313 (Specific toxic chemical listings):
None of the ingredients is listed.
· TSCA (Toxic Substances Control Act): All ingredients are listed or comply with TSCA regulations.

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**· Proposition 65**
**· Chemicals known to cause cancer:**

None of the ingredients are listed.

**· Chemicals known to cause reproductive toxicity for females:**

None of the ingredients are listed.

**· Chemicals known to cause reproductive toxicity for males:**

None of the ingredients are listed.

**· Chemicals known to cause developmental toxicity:**

None of the ingredients are listed.

**· Carcinogenic categories**
**· EPA (Environmental Protection Agency)**

Proprietary solvent blend

NL

**· TLV (Threshold Limit Value)**

Proprietary solvent blend

A3

**· NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients are listed.

**· California SCAQMD Rule 443.1 VOC's:** No information available.

**· GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

**· Hazard pictograms**


GHS05    GHS07    GHS08

**· Signal word** Danger

**· Hazard-determining components of labeling:**

Proprietary solvent blend

Monoethanolamine

Furfuryl alcohol

Proprietary Polyether

**· Hazard statements**

H227 Combustible liquid.

H302+H312 Harmful if swallowed or in contact with skin.

H314 Causes severe skin burns and eye damage.

H351 Suspected of causing cancer.

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

**· Precautionary statements**

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

P261 Avoid breathing dust/fume/gas/mist/vapors/spray

P280 Wear protective gloves/protective clothing/eye protection/face 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 person to fresh air and keep 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.

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- 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.*
- **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

### 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.*

- **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.*

- **Date of preparation / last revision** 02/07/2022 / 2

- **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

DOT: US Department of Transportation

IATA: International Air Transport Association

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)

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

VOC: Volatile Organic Compounds (USA, EU)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

NIOSH: National Institute for Occupational Safety

OSHA: Occupational Safety & Health

TLV: Threshold Limit Value

PEL: Permissible Exposure Limit

REL: Recommended Exposure Limit

BEI: Biological Exposure Limit

Flammable Liquids 4: Flammable liquids – Category 4

Acute Toxicity - Oral 4: Acute toxicity – Category 4

Acute Toxicity - Inhalation 3: Acute toxicity – Category 3

Skin Corrosion 1B: Skin corrosion/irritation – Category 1B

Skin Irritation 2: Skin corrosion/irritation – Category 2

Eye Damage 1: Serious eye damage/eye irritation – Category 1

Eye Irritation 2A: Serious eye damage/eye irritation – Category 2A

Carcinogenicity 2: Carcinogenicity – Category 2

Specific Target Organ Toxicity - Single Exposure 3: Specific target organ toxicity (single exposure) – Category 3

Specific Target Organ Toxicity - Repeated Exposure 2: Specific target organ toxicity (repeated exposure) – Category 2