

## Safety Data Sheet

acc. to OSHA HCS

Printing date 05/16/2023

Reviewed on 05/16/2023

### 1 Identification

- **Product identifier**
- **Trade name:** KMSF® 2000 Series Resists
- **Product number:** B345033, B345037
- **Application of the substance / the mixture** Photoresist
- **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**



GHS02 Flame

Flammable Liquids 3

H226 Flammable liquid and vapor.



GHS07

Skin Irritation 2

H315 Causes skin irritation.

Eye Irritation 2A

H319 Causes serious eye irritation.

Sensitization - Skin 1

H317 May cause an allergic skin reaction.

Specific Target Organ Toxicity - Single Exposure 3 H336 May cause drowsiness or dizziness.

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



GHS02 GHS07

- **Signal word** Warning
- **Hazard-determining components of labeling:**  
 1-Methoxy-2-propanol acetate  
 4-Formylmorpholine

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**Hazard statements**

- H226 Flammable liquid and vapor.
- H315 Causes skin irritation.
- H319 Causes serious eye irritation.
- H317 May cause an allergic skin reaction.
- H336 May cause drowsiness or dizziness.

**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)**

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

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

- **PBT:** Not applicable.
- **vPvB:** Not applicable.

### 3 Composition/information on ingredients

**Chemical characterization: Mixtures**
**Description:** Mixture of the substances listed below with nonhazardous additions.

**Dangerous components:**

108-65-6	1-Methoxy-2-propanol acetate	40-65%
	⚠ Flammable Liquids 3, H226; ⚠ Specific Target Organ Toxicity - Single Exposure 3, H336	

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4394-85-8	4-Formylmorpholine ⚠ Sensitization - Skin 1B, H317	5-20%
	Proprietary Bismaleimide Monomer ⚠ Acute Toxicity - Oral 4, H302; Acute Toxicity - Dermal 4, H312; Skin Irritation 2, H315	5-15%
2564-83-2	2,2,6,6-Tetramethylpiperidinoxy ⚠ Corrosive to Metals 1, H290; Skin Corrosion 1B, H314; Eye Damage 1, H318	1-5%
	Proprietary Initiator ⚠ Acute Toxicity - Oral 4, H302; Sensitization - Skin 1B, H317	1-5%
58068-97-6	Triethoxy-3-(2-imidazolin-1-yl)propylsilane ⚠ Skin Corrosion 1B, H314; ⚠ Acute Toxicity - Oral 4, H302; Acute Toxicity - Dermal 4, H312	<0.5%

**Additional Components:**

Proprietary Polymer	20-40%
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### 4 First-aid measures

**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:**

Do not induce vomiting unless instructed to do so by a physician. Wash out mouth with water and keep person at rest. Seek immediate medical attention.

**Information for doctor:**

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

**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.

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### 6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures**

Wear protective equipment. Keep unprotected persons away.

Keep away from ignition sources

Ensure adequate ventilation

· **Environmental precautions:** 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).

Ensure adequate ventilation.

Do not flush with water or aqueous cleansing agents

· **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.

· **Protective Action Criteria for Chemicals**

· **PAC-1:**

108-65-6	1-Methoxy-2-propanol acetate	50 ppm
	Adhesion promoter	71 mg/m <sup>3</sup>

· **PAC-2:**

108-65-6	1-Methoxy-2-propanol acetate	1,000 ppm
	Adhesion promoter	780 mg/m <sup>3</sup>

· **PAC-3:**

108-65-6	1-Methoxy-2-propanol acetate	5000* ppm
	Adhesion promoter	4,700 mg/m <sup>3</sup>

### 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.

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

Protect against electrostatic charges.

· **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.

Do not store together with alkalis (caustic solutions).

· **Further information about storage conditions:**

Protect from heat and direct sunlight.

Keep container well-sealed in cool, dry location.

Store receptacle in a well ventilated area.

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 · **Specific end use(s)** No further relevant information available.

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### 8 Exposure controls/personal protection

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

 · **Control parameters**

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

The following constituent is the only constituent of the product which has a PEL, TLV or other recommended exposure limit.

At this time, the other constituents have no known exposure limits.

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

WEEL Long-term value: 50 ppm

 · **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** Nitrile rubber, NBR

 · **Penetration time of glove material** Contact glove manufacture for break-through time.

 · **Eye protection:**


Tightly sealed goggles

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

### 9 Physical and chemical properties

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

 · **General Information**

 · **Appearance:**

**Form:** Liquid  
**Color:** Dark red

 · **Odor:** Mild

 · **Odor threshold:** Not determined.

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· <b>pH-value:</b>	<i>Not determined.</i>				
· <b>Change in condition</b>					
<b>Melting point/Melting range:</b>	<i>Undetermined.</i>				
<b>Boiling point/Boiling range:</b>	<i>146.4 °C (295.5 °F)</i>				
· <b>Flash point:</b>	<i>46 °C (114.8 °F)</i>				
· <b>Flammability (solid, gaseous):</b>	<i>Not applicable.</i>				
· <b>Decomposition temperature:</b>	<i>Not determined.</i>				
· <b>Ignition temperature:</b>	<i>Product is not selfigniting.</i>				
· <b>Danger of explosion:</b>	<i>Product is not explosive. However, formation of explosive air/vapor mixtures are possible.</i>				
· <b>Explosion limits:</b>					
<b>Lower:</b>	<i>1.5 Vol %</i>				
<b>Upper:</b>	<i>10.8 Vol %</i>				
· <b>Vapor pressure at 20 °C (68 °F):</b>	<i>5 hPa (3.8 mm Hg)</i>				
· <b>Density:</b>	<i>Not determined.</i>				
· <b>Relative density</b>	<i>See Other information</i>				
· <b>Vapor density</b>	<i>Not determined.</i>				
· <b>Evaporation rate</b>	<i>1.6-2.3 (BuAc=1)</i>				
· <b>Solubility in / Miscibility with Water:</b>	<i>Water miscible No</i>				
· <b>Partition coefficient (n-octanol/water):</b>	<i>Not determined.</i>				
· <b>Viscosity:</b>					
<b>Dynamic:</b>	<i>Not determined.</i>				
<b>Kinematic:</b>	<i>Not determined.</i>				
· <b>Other information</b>	<i>Name</i>	<i>Number</i>	<i>Sp. Grav.</i>	<i>VOC(%by wt.)</i>	<i>VOC(g/L)</i>
	<i>KMSF 2005</i>	<i>B345033</i>	<i>1.005</i>	<i>57</i>	<i>575</i>
	<i>KMSF 2010</i>	<i>B345037</i>	<i>1.007</i>	<i>54</i>	<i>540</i>

### 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**  
 Contact with incompatible materials.  
 Heat, flames and sparks. Extremes of temperature and direct sunlight.
- **Incompatible materials:** Strong Oxidizing Agents, Strong Acids, Strong Bases
- **Hazardous decomposition products:**  
 Carbon monoxide and carbon dioxide  
 Hydrocarbons  
 Nitrogen oxides (NO<sub>x</sub>)

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Silicon oxide

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## 11 Toxicological information

### · Information on toxicological effects

#### · Acute toxicity:

#### · Primary irritant effect:

· **on the skin:** Irritant to skin and mucous membranes.

· **on the eye:** Irritating effect.

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

#### · Additional toxicological information:

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

### · Carcinogenic categories

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

None of the ingredients are listed.

#### · NTP (National Toxicology Program)

None of the ingredients are listed.

#### · OSHA-Ca (Occupational Safety & Health Administration)

None of the ingredients are listed.

## 12 Ecological information

### · Toxicity

· **Aquatic toxicity:** No further relevant information available.

· **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 2 (Self-assessment): hazardous for water

Do not allow product to reach ground water, water course or sewage system.

Danger to drinking water if even small quantities leak into the ground.

### · 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.

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

### 14 Transport information

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

· **UN proper shipping name**  
 · **DOT** Resin solution  
 · **ADR, IMDG, IATA** RESIN SOLUTION

· **Transport hazard class(es)**  
 · **DOT**



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

· **ADR, IMDG, IATA**



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

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

· **Environmental hazards:** Not applicable.

· **Special precautions for user** Warning: Flammable liquids

· **Hazard identification number (Kemler code):** 30

· **EMS Number:** F-E,S-E

· **Stowage Category** A

· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** Not applicable.

· **Transport/Additional information:**

· **DOT**  
 · **Quantity limitations** On passenger aircraft/rail: 60 L  
 On cargo aircraft only: 220 L

· **ADR**  
 · **Excepted quantities (EQ)** Code: E1  
 Maximum net quantity per inner packaging: 30 ml  
 Maximum net quantity per outer packaging: 1000 ml

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- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>· <b>IMDG</b></li> <li>· <b>Limited quantities (LQ)</b></li> <li>· <b>Excepted quantities (EQ)</b></li> </ul> | <p>5L</p> <p>Code: E1</p> <p>Maximum net quantity per inner packaging: 30 ml</p> <p>Maximum net quantity per outer packaging: 1000 ml</p> |
| <ul style="list-style-type: none"> <li>· <b>UN "Model Regulation":</b></li> </ul>  | <p>UN 1866 RESIN SOLUTION, 3, III</p>   |

### 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.

- **Hazardous Air Pollutants**

None of the ingredients are listed.

- **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)**

None of the ingredients are listed.

- **TLV (Threshold Limit Value)**

None of the ingredients are listed.

- **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).

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· **Hazard pictograms**



GHS02 GHS07

· **Signal word** Warning

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

1-Methoxy-2-propanol acetate

4-Formylmorpholine

· **Hazard statements**

H226 Flammable liquid and vapor.

H315 Causes skin irritation.

H319 Causes serious eye irritation.

H317 May cause an allergic skin reaction.

H336 May cause drowsiness or dizziness.

· **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.

· **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:** New SDS

· **Date of preparation / last revision** 05/16/2023

· **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

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CAS: Chemical Abstracts Service (division of the American Chemical Society)

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

NIOSH: National Institute for Occupational Safety

OSHA: Occupational Safety &amp; Health

TLV: Threshold Limit Value

PEL: Permissible Exposure Limit

REL: Recommended Exposure Limit

Flammable Liquids 3: Flammable liquids – Category 3

Corrosive to Metals 1: Corrosive to metals – Category 1

Acute Toxicity - Oral 4: Acute toxicity – Category 4

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

Sensitization - Skin 1: Skin sensitisation – Category 1

Sensitization - Skin 1B: Skin sensitisation – Category 1B

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

US