KAYAKU ADVANCED MATERIALS

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

Printing date 16.08.2019 Version number 2 Revision: 16.08.2019

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

· **1.1 Product identifier**

· **Trade name: KMPR® 2000 Series Resists**

· **Article number:** Y212064, Y212045, Y212031, Y212020
· **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
· **Application of the substance / the mixture** Photoresist

· **1.3 Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
Kayaku Advanced Materials
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**

GHS02 flame

Flam. Liq. 3 H226 Flammable liquid and vapour.

GHS07

Skin Irrit. 2 H315 Causes skin irritation.
Eye Irrit. 2 H319 Causes serious eye irritation.

· **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:**
Epoxy Resin (CAS Proprietary)

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1-methoxy-2-propanol
Cyclopentanone

· **Hazard statements**
H226 Flammable liquid and vapour.
H315 Causes skin irritation.
H319 Causes serious eye irritation.

· **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. |
| 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 for extinction: Alcohol resistant foam. |
| P370+P378 | In case of fire: Use for extinction: Fire-extinguishing powder. |
| P370+P378 | In case of fire: Use for extinction: 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:**
58.9 % of the mixture consists of component(s) of unknown toxicity.
Contains 58.9 % 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.

## SECTION 3: Composition/information on ingredients

· **3.2 Chemical characterisation: Mixtures**
· **Description:** Mixture of substances listed below with nonhazardous additions.

· **Dangerous components:**

| | | |
|---|---|---|
| | Epoxy Resin (CAS Proprietary)<br>Skin Irrit. 2, H315; Eye Irrit. 2, H319; Skin Sens. 1, H317 | 60-80% |
| CAS: 120-92-3<br>EINECS: 204-435-9<br>Index number: 606-025-00-9 | Cyclopentanone<br>Flam. Liq. 3, H226; Skin Irrit. 2, H315; Eye Irrit. 2, H319 | 10-25% |
| CAS: 107-98-2<br>EINECS: 203-539-1<br>Index number: 603-064-00-3 | 1-methoxy-2-propanol<br>Flam. Liq. 3, H226; STOT SE 3, H336 | 5-15% |

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| | | |
|---|---|---|
| *CAS: 108-32-7*<br>*EINECS: 203-572-1*<br>*Index number: 607-194-00-1* | *Propylene carbonate*<br>*Skin Irrit. 2, H315; Eye Irrit. 2, H319* | *1-5%* |
| *CAS: 71449-78-0* | *Sulfonium, diphenyl[4-(phenylthio)phenyl]-, (OC-6-11)-hexafluoroantimonate(1-) (1:1)*<br>*Aquatic Acute 1, H400; Aquatic Chronic 1, H410; Skin Sens. 1, H317* | *1-5%* |
| *CAS: 89452-37-9* | *Sulfonium, (thiodi-4,1-phenylene) bis[diphenyl-,(OC-6-11)-hexafluoroantimonate (1-) (1:2)*<br>*Aquatic Acute 1, H400; Aquatic Chronic 1, H410; Skin Sens. 1, H317* | *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.*
*If skin irritation continues, consult a doctor.*
· ***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; call for medical help 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*
*Water*
· ***5.2 Special hazards arising from the substance or mixture***
*Containers may explode due to pressure increase when container is exposed to extreme heat. Vapors may travel a considerable distance to a source of ignition and flash back along vapor trail.*
· ***5.3 Advice for firefighters***
· ***Protective equipment:*** *Wear self-contained respiratory protective device.*



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## SECTION 6: Accidental release measures

· **6.1 Personal precautions, protective equipment and emergency procedures**
Ensure adequate ventilation
Keep away from ignition sources.
Wear protective equipment. Keep unprotected persons away.
· **6.2 Environmental precautions:** 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.
Do not flush with water or aqueous cleansing agents
· **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**
Keep away from heat and direct sunlight.
Ensure good ventilation/exhaust at the workplace.
Prevent formation of aerosols.
· **Information about fire - and explosion protection:**
Use explosion-proof apparatus / fittings and spark-proof tools.
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:**
Due to photo-sensitivity, store product in brown-glass or stainless steel receptacles.
Store in a cool location.
· **Information about storage in one common storage facility:**
Do not store together with amines.
Do not store together with alkalis (caustic solutions).
Do not store together with oxidising and acidic materials.
· **Further information about storage conditions:**
Protect from exposure to the light.
Keep container tightly sealed.
· **7.3 Specific end use(s)** No further relevant information available.

## SECTION 8: Exposure controls/personal protection

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

· **8.1 Control parameters**

| · **Ingredients with limit values that require monitoring at the workplace:** | |
|---|---|
| **107-98-2 1-methoxy-2-propanol** | |
| IOELV | Short-term value: 568 mg/m³, 150 ppm<br>Long-term value: 375 mg/m³, 100 ppm<br>Skin |

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

· ***8.2 Exposure controls***
· ***Personal protective equipment:***
· ***General protective and hygienic measures:***
*Do not eat or drink while working.*
*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.*
· ***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*
*Butyl rubber, BR*
· ***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*

## *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:*** | *Not determined.* |
| · ***Change in condition*** | |
| ***Melting point/freezing point:*** | *Undetermined.* |
| ***Initial boiling point and boiling range:*** | *130 °C* |
| · ***Flash point:*** | *30 °C* |
| · ***Flammability (solid, gas):*** | *Not applicable.* |
| · ***Ignition temperature:*** | *270 °C* |
| · ***Decomposition temperature:*** | *Not determined.* |
| · ***Auto-ignition temperature:*** | *Product is not selfigniting.* |

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| | |
|---|---|
| · ***Explosive properties:*** | *Product is not explosive. However, formation of explosive air/vapour mixtures are possible.* |
| · ***Explosion limits:*** | |
| ***Lower:*** | *1.3 Vol %* |
| ***Upper:*** | *Not determined.* |
| · ***Vapour pressure at 20 °C:*** | *11 hPa* |
| · ***Density:*** | *Not determined* |
| · ***Relative density*** | *See Table 1 Other Information* |
| · ***Vapour density*** | *Not determined.* |
| · ***Evaporation rate*** | *Not determined.* |
| · ***Solubility in / Miscibility with water:*** | *Not miscible or difficult to mix.* |
| · ***Partition coefficient: n-octanol/water:*** | *Not determined.* |
| · ***Viscosity:*** | |
| ***Dynamic:*** | *Not determined.* |
| ***Kinematic:*** | *Not determined.* |
| · ***9.2 Other information*** | *Table 1. Product specific gravity and VOC data.* |

| *Name* | *Product No.* | *Sp. Gravity* | *Vol (% by wt.)* | *VOC (g/L)* |
|---|---|---|---|---|
| *KMPR 2001* | *Y212020* | *0.99* | *78-81* | *790* |
| *KMPR 2002* | *Y212031* | *1.03* | *68-70* | *710* |
| *KMPR 2005* | *Y212045* | *1.06* | *54-56* | *585* |
| *KMPR 2025* | *Y212064* | *1.20* | *35-38* | *435* |

## *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*** *Exothermic polymerisation.*
· ***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 Bases, Strong Acids, Amines*
· ***10.6 Hazardous decomposition products:***
*Carbon monoxide and carbon dioxide*
*Corrosive gases/vapours*
*Danger of forming toxic pyrolysis products.*



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## 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* | *1820 mg/kg (Rat)* |
| *Dermal* | *LD50* | *>2000 mg/kg (rabbit)* |
| *Inhalative* | *LC50/4 h* | *>19.5 mg/l (Rat)* |
| ***107-98-2 1-methoxy-2-propanol*** | | |
| *Oral* | *LD50* | *5660 mg/kg (Rat)* |
| *Dermal* | *LD50* | *13000 mg/kg (rabbit)* |
| *Inhalative* | *LC50/4 h* | *54.6 mg/l (Rat)* |
| ***108-32-7 Propylene carbonate*** | | |
| *Oral* | *LD50* | *>29000 mg/kg (Rat)* |
| *Dermal* | *LD50* | *>20,000 mg/kg (rabbit)* |

· ***Primary irritant effect:***
· ***Skin corrosion/irritation***
*Causes skin irritation.*
· ***Serious eye damage/irritation***
*Causes serious eye irritation.*
· ***Respiratory or skin sensitisation*** *Based on available data, the classification criteria are not met.*
· ***Experience with humans:*** *No further relevant information available.*
· ***CMR effects (carcinogenity, 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*** *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*** *Based on available data, the classification criteria are not met.*
· ***Aspiration hazard*** *Based on available data, the classification criteria are not met.*

## SECTION 12: Ecological information

· ***12.1 Toxicity***

| · ***Aquatic toxicity:*** | |
|---|---|
| ***120-92-3 Cyclopentanone*** | |
| *EC50/48 h* | *3600 mg/l (Ceriodaphnia dubia (water flea))* |
| | *100 mg/l (daphnia magna)* |
| *EC50/72 h* | *>100 mg/l (scenedesmus subspicatus)* |
| *LC50/48 hr* | *2950 mg/L (golden orfe)* |
| *LC50/96 h* | *>100 mg/l (fish)* |
| ***107-98-2 1-methoxy-2-propanol*** | |
| *EC50/96 hr* | *23300 mg/l (daphnia magna)* |
| | *>1000 mg/l (green algae)* |
| *LC50/96 h* | *20800 mg/l (Pimephales promelas)* |

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| ***108-32-7 Propylene carbonate*** | |
|---|---|
| *EC50/17 h* | *>10000 mg/l (Pseudomonas putida)* |
| *EC50/48 h* | *>500 mg/l (daphnia magna)* |
| *EC50/72 h* | *>500 mg/l (scenedesmus subspicatus)* |
| *LC50/96 h* | *2200 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:***
*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.*
*Disposal must be made in accordance with International, National, and regional regulations.*

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

## *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:*** | |
| · ***Marine pollutant:*** | *No* |
| · ***14.6 Special precautions for user*** | *Warning: Flammable liquids.* |
| · ***Danger code (Kemler):*** | *30* |

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| | |
|---|---|
| · ***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*<br>*Maximum net quantity per inner packaging: 30 ml*<br>*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*<br>*Maximum net quantity per inner packaging: 30 ml*<br>*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***
· ***REGULATION (EC) No 1907/2006 ANNEX XVII*** *Conditions of restriction: 3*
· ***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.*
*H315 Causes skin irritation.*
*H317 May cause an allergic skin reaction.*
*H319 Causes serious eye irritation.*
*H336 May cause drowsiness or dizziness.*
*H400 Very toxic to aquatic life.*
*H410 Very toxic to aquatic life with long lasting effects.*
· ***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)*
· ***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:***
*RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)*

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*ICAO: International Civil Aviation Organisation*
*ADR: Accord européen sur le transport 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*
*Skin Irrit. 2: Skin corrosion/irritation – Category 2*
*Eye Irrit. 2: Serious eye damage/eye irritation – Category 2*
*Skin Sens. 1: Skin sensitisation – Category 1*
*STOT SE 3: Specific target organ toxicity (single exposure) – Category 3*
*Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1*
*Aquatic Chronic 1: Hazardous to the aquatic environment - long-term aquatic hazard – Category 1*