

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

Printing date 11.05.2021

Version number 5

Revision: 11.05.2021

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

· **1.1 Product identifier**

· **Trade name:** PMGI SF Series Resists

· **Article number:**

G113101, G113102, G113103, G113104, G113105, G113106, G113107, G113175, G113108, G113109, G113110, G113111, G113112, G113113, G113114, G113115, G113117, G113119, G113123

· **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

· **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

· **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.



GHS08 health hazard

Repr. 2 H361 Suspected of damaging fertility or the unborn child.



GHS07

Acute Tox. 4 H302 Harmful if swallowed.

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.

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Trade name: PMGI SF Series Resists

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Hazard pictograms


GHS02 GHS07 GHS08

Signal word Warning

Hazard-determining components of labelling:

Tetrahydrofurfuryl alcohol

Hazard statements

H226 Flammable liquid and vapour.

H302 Harmful if swallowed.

H315 Causes skin irritation.

H319 Causes serious eye irritation.

H361 Suspected of damaging fertility or the unborn child.

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 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: 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	65-85%
CAS: 97-99-4 EINECS: 202-625-6 Index number: 603-061-00-7	Tetrahydrofurfuryl alcohol Repr. 2, H361; Acute Tox. 4, H302; Eye Irrit. 2, H319	1-15%

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CAS: 102322-80-5

Polyaliphatic imide copolymer

1-25%

 Skin Irrit. 2, H315; Eye Irrit. 2, H319

Additional Components:

Proprietary surfactant

<1%

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: 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

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.

SECTION 6: Accidental release measures
6.1 Personal precautions, protective equipment and emergency procedures

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

Keep away from ignition sources.

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.

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- Do not flush with water or aqueous cleansing agents
- Dispose contaminated material as waste according to item 13.
- **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.
 - Keep receptacles tightly sealed.
 - Use only under yellow light
 - Prevent formation of aerosols.
- **Information about fire - and explosion protection:**
 - Keep ignition sources away - Do not smoke.
 - Use explosion-proof apparatus / fittings and spark-proof tools.
 - Protect against electrostatic charges.
- **7.2 Conditions for safe storage, including any incompatibilities**
 - **Storage:**
 - **Requirements to be met by storerooms and containers:**
 - Store in a cool location.
 - Store in inert atmosphere or keep well sealed to prevent the formation of peroxides and other oxidation products.
 - **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.
 - Store receptacle in a well ventilated area.
 - Protect from heat and direct sunlight.
 - **7.3 Specific end use(s)** No further relevant information available.

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:**
 - The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
 - **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 inhale gases / fumes / aerosols.
 - 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.

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 · **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

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

 · **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 protection:**


Tightly sealed goggles

SECTION 9: Physical and chemical properties

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

 · **General Information**

 · **Appearance:**

Form:	Liquid
Colour:	Clear to light yellow
Odour:	Sweetish
Odour threshold:	Not determined.

 · **pH-value:** Not determined.

 · **Change in condition**

Melting point/freezing point:	Undetermined.
Initial boiling point and boiling range:	130-180 °C

 · **Flash point:** 30 °C

 · **Flammability (solid, gas):** Not applicable.

 · **Ignition temperature:** 280 °C

 · **Decomposition temperature:** Not determined.

 · **Auto-ignition temperature:** Product is not selfigniting.

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

 · **Explosion limits:**

Lower:	1.5 Vol %
Upper:	Not determined.

 · **Vapour pressure at 20 °C:** 0.3 hPa

 · **Density:** Not determined.

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· Vapour density	Not determined.																																																																																																				
· Evaporation rate	Not determined.																																																																																																				
· Solubility in / Miscibility with water:	Slightly soluble.																																																																																																				
· Partition coefficient: n-octanol/water:	Not determined.																																																																																																				
· Viscosity:																																																																																																					
Dynamic:	Not determined.																																																																																																				
Kinematic:	Not determined.																																																																																																				
· 9.2 Other information																																																																																																					
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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 Bases, Strong Acids, Amines
- 10.6 Hazardous decomposition products: Carbon monoxide and carbon dioxide

SECTION 11: Toxicological information

- 11.1 Information on toxicological effects
- Acute toxicity
 Harmful if swallowed.

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· LD/LC50 values relevant for classification:		
120-92-3 Cyclopentanone		
Oral	LD50	1180 mg/kg (Rat)
Dermal	LD50	>2000 mg/kg (rabbit)
Inhalative	LC50/4 h	>19.5 mg/l (Rat)
97-99-4 Tetrahydrofurfuryl alcohol		
Oral	LD50	800 mg/kg (Guinea pig) 2300 mg/kg (mouse) 1600 mg/kg (Rat)
Dermal	LD50	5000 mg/kg (Guinea pig)
102322-80-5 Polyaliphatic imide copolymer		
Oral	LD50	>5000 mg/kg (Rat) (Data for compositionally similar material)
Dermal	LD50	>5000 mg/kg (Rat) (Data for compositionally similar material)

- **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.
- **Additional toxicological information:**
- **CMR effects (carcinogenicity, 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**
Suspected of damaging fertility or the unborn child.
- **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	100 mg/l (daphnia magna)
EC50/72 h	>100 mg/l (scenedesmus subspicatus)
LC50/96 h	>100 mg/l (fish)

- **12.2 Persistence and degradability** Moderately /partly biodegradable
- **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.
- **12.5 Results of PBT and vPvB assessment**
- **PBT:** Not applicable.

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- **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 · Label	3 Flammable liquids. 3
· 14.4 Packing group · ADR, IMDG, IATA	III
· 14.5 Environmental hazards: · Marine pollutant:	No
· 14.6 Special precautions for user · Hazard identification number (Kemler code): · EMS Number:	Warning: Flammable liquids. 33 F-E, <u>S-E</u>
· 14.7 Transport in bulk according to Annex II of Marpol and the IBC Code	Not applicable.
· Transport/Additional information:	
· ADR · Limited quantities (LQ) · Transport category · Tunnel restriction code	5L 3 D/E
· UN "Model Regulation":	UN1866, RESIN SOLUTION, 3, III

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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**
- **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.**H319 Causes serious eye irritation.**H361 Suspected of damaging fertility or the unborn child.***· 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:***RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)**ICAO: International Civil Aviation Organisation**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**Repr. 2: Reproductive toxicity – Category 2*