

Printing date 12.10.2021 Version number 4 Revision: 12.10.2021

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

- · 1.1 Product identifier
- · Trade name: PMGI SF Slow Series Resists
- · Article number:

G213102, G213103, G213104, G213105, G213106, G213107, G213108, G213109, G213111, G213113, G213115, G213119

- · 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
- · Product category PC30 Photo-chemicals
- · Application of the substance / the mixture Photoresist
- · 1.3 Details of the supplier of the safety data sheet
- · Manufacturer/Supplier:

Manufacturer:

Kayaku Advanced Materials

200 Flanders Road

Westborough, MA 01581 Telephone: (617) 965-5511

Fax: (617) 965-5818

Importer:

A-Gas Electronic Materials

Unit 3, IO Centre

Swift Valley

Rugby, Warwickshire

CV21 1TW, UK

Tel: +44-0-1788-537535 Fax: +44-0-1788-535835 Website: www.agasem.com

Email: customerservice.em@agas.com

· 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



Flam. Liq. 3 H226 Flammable liquid and vapour.



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

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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.

· 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.

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.



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SECTION 3: Composition/information on ingredients

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

· Dangerous components:		
	Cyclopentanone	65-85%
EINECS: 204-435-9	🍅 Flam. Liq. 3, H226; 아 Skin Irrit. 2, H315; Eye Irrit. 2, H319	
	Tetrahydrofurfuryl alcohol	1-15%
EINECS: 202-625-6	🕸 Repr. 2, H361; 🕚 Acute Tox. 4, H302; Eye Irrit. 2, H319	

· Additional Components:

102322-80-5 Polyaliphatic imide copolymer

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

1-25%

· 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

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

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.

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

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.

Protect from heat and direct sunlight.

Store receptacle in a well ventilated area.

· 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.

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- · 8.2 Exposure controls
- · Personal protective equipment:
- · General protective and hygienic measures:

Keep away from food and beverages.

Do not inhale gases / fumes / aerosols.

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

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: Slightly sweet
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: 280 °C

· Decomposition temperature: Not determined.

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Auto-ignition temperature:	Product is not selfigniting.		
Explosive properties:	Product is not explosive. However, formation of explosive air/vapmixtures are possible.		
Explosion limits:			
Lower:	1.5 Vol %		
Upper:	9.7 Vol %		
Vapour pressure at 20 °C:	0.3 hPa		
Density:	Not determined		
Relative density	See Table 1 Other Information		
Vapour density	Not determined.		
Evaporation rate	Not determined.		
Solubility in / Miscibility with			
water:	Partly miscible.		
Partition coefficient: n-octanol/water:	Not determined.		
Viscosity:			
Dynamic:	Not determined.		
Kinematic:	Not determined.		
9.2 Other information	Name Number Sp. Grav. Vol.(%by wt.) VOC(g/L)		
	SF2S G213102 0.968 98 950		
	SF3S G213103 0.970 97 945		
	SF4S G213104 0.973 96 935		
	SF5S G213105 0.975 95 930		
	SF6S G213106 0.980 94 920		
	SF7S G213107 0.981 93 915		
	SF8S G213108 0.984 92 905		
	SF9S G213109 0.985 91 900		
	SF11S G213111 0.992 89 880		
	SF13S G213113 0.998 87 860		
	SF15S G213115 1.003 85 850		
	SF 19S G213119 1.010 81 800		

SECTION 10: Stability and reactivity

- · 10.1 Reactivity No further relevant information available.
- · 10.2 Chemical stability
- 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



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SECTION 11: Toxicological information

- · 11.1 Information on toxicological effects
- · Acute toxicity

Harmful if swallowed.

· LD/LC50 1	LD/LC50 values relevant for classification:				
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)			
120-92-3 (Cyclopenta	none			
Oral	LD50	1180 mg/kg (Rat)			
Dermal	LD50	>2000 mg/kg (rabbit)			
Inhalative	LC50/4 h	>19.5 mg/l (Rat)			
102322-80	-5 Polyalip	phatic 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 (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

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

ſ	· 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 No further relevant information available.
- · 12.3 Bioaccumulative potential No further relevant information available.
- · 12.4 Mobility in soil No further relevant information available.

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- · 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.
- · 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.

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

14.1 UN-Number		
ADR, IMDG, IATA	UN1866	
14.2 UN proper shipping name		
ADR	1866 RESIN SOLUTION	
IMDG, IATA	RESIN SOLUTION	
14.3 Transport hazard class(es)		
ADR, IMDG, IATA		
Class	3 Flammable liquids.	
Label	3	
14.4 Packing group		
ADR, IMDĞ, IATA	III	
14.5 Environmental hazards:		
Marine pollutant:	No	
14.6 Special precautions for user	Warning: Flammable liquids.	
Hazard identification number (Kemler code):	33	
EMS Number:	F-E, <u>S-E</u>	
14.7 Transport in bulk according to Annex II o	pf .	
Marpol and the IBC Code	Not applicable.	
Transport/Additional information:		
ADR		
Limited quantities (LQ)	5L	



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Transport category
 Tunnel restriction code
 3
 D/E

· UN "Model Regulation": UN1866, RESIN SOLUTION, 3, III

SECTION 15: Regulatory information

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

- · Department issuing SDS: Product safety department
- · Contact: Tom Cole, EHS Manager (tcole@kayakuAM.com)
- · 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