

1 Identification of the substance/mixture and of the company

- **Product identifier**
- **Trade name:** *PMGI SFG Slow Series Resists*
- **Product number:**
G212120, G212150, G212160, G212170, G212101, G212102, G212103, G212106, G212109, G212115
- **Application of the substance / the preparation** *Photoresist*
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
MicroChem Corp.
90 Oak Street
P.O. Box 426
Newton, MA 02464-0002 USA
- **Information department:**
Product Safety
Email: productsafety@microchem.com
- **Emergency telephone number:**
MicroChem Corp : 617-965-5511
Chemtrec USA Emergency : 800-424-9300
Chemtrec International Emergency : 703-527-3887

2 Hazards identification

- **Classification of the substance or mixture**



GHS02 Flame

Flam. Liq. 3 H226 *Flammable liquid and vapor.*



GHS08 Health hazard

STOT RE 2 H373 *May cause damage to the central nervous system, the kidneys and the liver through prolonged or repeated exposure. Route of exposure: Oral, Inhalative and Dermal.*



GHS07

Skin Irrit. 2 H315 *Causes skin irritation.*
 Eye Irrit. 2A H319 *Causes serious eye irritation.*
 STOT SE 3 H335-H336 *May cause respiratory irritation. May cause drowsiness or dizziness.*

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



GHS02



GHS07



GHS08

- **Signal word** *Warning*

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- **Hazard-determining components of labelling:**

1-methoxy-2-propanol

Cyclopentanone

- **Hazard statements**

H226 Flammable liquid and vapor.

H315 Causes skin irritation.

H319 Causes serious eye irritation.

H335-H336 May cause respiratory irritation. May cause drowsiness or dizziness.

H373 May cause damage to the central nervous system, the kidneys and the liver through prolonged or repeated exposure. Route of exposure: Oral, Inhalative and Dermal.

- **Precautionary statements**

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

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P233 Keep container tightly closed.

P312 Call a POISON CENTER or doctor/physician if you feel unwell.

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.

- **Classification system:**

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



Health = 2

Fire = 3

Reactivity = 0

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



Health = 2

Fire = 3

Reactivity = 0

- **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:**

120-92-3	Cyclopentanone ⚠ Flam. Liq. 3, H226; ⚠ Acute Tox. 4, H312; Acute Tox. 4, H332; Skin Irrit. 2, H315; Eye Irrit. 2, H319; STOT SE 3, H335-H336	65-85%
107-98-2	1-methoxy-2-propanol ⚠ Flam. Liq. 3, H226; ⚠ STOT RE 2, H373; ⚠ STOT SE 3, H335	10-15%

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· **Additional Components:**

102322-80-5	Polyaliphatic imide copolymer	0.2-20%
	⚠ Skin Irrit. 2, H315; Eye Irrit. 2A, H319; STOT SE 3, H335	

4 First aid measures

- **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:** Rinse opened eye for several minutes under running water and then consult a doctor.
- **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**
No further relevant information available.

5 Firefighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:**
Alcohol resistant foam
Fire-extinguishing powder
Carbon dioxide
- **For safety reasons unsuitable extinguishing agents:**
Water with full jet
Water
- **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.
- **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.
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
Dispose contaminated material as waste according to Section 13.

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- **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.
Keep receptacles tightly sealed.
Store in cool, dry place in tightly closed containers.
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:**
Store in a cool location.
Due to photo-sensitivity, store product in brown-glass or stainless steel receptacles.
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 alkalis (caustic solutions).
Do not store together with oxidizing and acidic materials.
- **Further information about storage conditions:**
Keep container well-sealed in cool, dry location.
Protect from exposure to the light.
- **Specific end use(s)** No further relevant information available.

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:**

107-98-2 1-methoxy-2-propanol

REL	Short-term value: 540 mg/m ³ , 150 ppm Long-term value: 360 mg/m ³ , 100 ppm
TLV	Short-term value: 553 mg/m ³ , 150 ppm Long-term value: 369 mg/m ³ , 100 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.

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- **Respiratory equipment:**
In case of low exposure, use cartridge respirator. In case of intensive or longer exposure, use SCBA.
- **Protection of hands:**



Protective gloves

- Contact glove manufacturer for break-through time.
- **Material of gloves** Nitrile rubber, NBR
- **Penetration time of glove material** Contact glove manufacture for break-through time.
- **Eye protection:**



Tightly sealed goggles

9 Physical and chemical properties

· Information on basic physical and chemical properties

· General Information

· Appearance:

· Form:	Liquid
· Color:	Clear to light yellow
· Odor:	Slightly sweet
· Odour threshold:	Not determined.

· **pH-value:** Not determined.

· Change in condition

· Melting point/Melting range:	Undetermined.
· Boiling point/Boiling range:	120 °C (248 °F)

· **Flash point:** 30 °C (86 °F)

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

· **Ignition temperature:** 270 °C (518 °F)

· **Decomposition temperature:** Not determined.

· **Auto igniting:** Product is not selfigniting.

· **Danger of explosion:** Product is not explosive. However, formation of explosive air/vapor mixtures are possible.

· Explosion limits:

· Lower:	2.3 Vol %
· Upper:	Not determined.

· **Vapor pressure at 20 °C (68 °F):** 12 hPa (9 mm Hg)

- **Density:** Not determined.
- **Relative density** See Table 1 Other Information
- **Vapour density** Not determined.
- **Evaporation rate** Not determined.

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· **Solubility in / Miscibility with Water:** Water miscible No

· **Partition coefficient (n-octanol/water):** Not determined.

· **Viscosity:**
Dynamic: Not determined.
Kinematic: Not determined.

· **Solvent content:**
VOC content: See Table 1 below
 · **Other information** Table 1. Product specific gravity and VOC data.

Name	Number	Sp. Grav.	Vol.(%by wt.)	VOC(g/L)
SFG 0.2S	G212120	0.950	99.8	940
SFG 0.5S	G212150	0.950	99.5	940
SFG 0.6S	G212160	0.950	99.4	940
SFG 0.7S	G212170	0.950	99.3	940
SFG 1S	G212101	0.950	99	940
SFG 2S	G212102	0.960	98	940
SFG 3S	G212103	0.970	97	940
SFG 6S	G212106	0.980	94	920
SFG 9S	G212109	0.990	91	900
SFG 15S	G212115	1.05	85	890

10 Stability and reactivity

- **Reactivity**
- **Chemical stability** Stable under normal use conditions
- **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.
- **Incompatible materials:** Strong Oxidizing Agents, Strong Acids, Strong Bases
- **Hazardous decomposition products:**
 Carbon monoxide and carbon dioxide
 Nitrogen oxides

11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity:**

· **LD/LC50 values that are 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)

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)

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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:**· **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.

12 Ecological information· **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)

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)

· **Persistence and degradability** Moderately /partly biodegradable· **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.

· **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, IMDG, IATA · ADR	RESIN SOLUTION 1866 RESIN SOLUTION
· Transport hazard class(es) · DOT	
	
· Class · Label	3 Flammable liquids. 3
· ADR, IMDG, IATA	
	
· Class · Label	3 Flammable liquids 3
· Packing group · DOT, ADR, IMDG, IATA	III
· Environmental hazards: · Marine pollutant:	No
· Special precautions for user · Danger code (Kemler): · EMS Number:	Warning: Flammable liquids 33 F-E,S-E
· Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
· UN "Model Regulation":	UN1866, RESIN SOLUTION, 3, 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.

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· **TSCA (Toxic Substances Control Act):**

All ingredients are listed or comply with TSCA regulations.

· **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 established by ACGIH)**

None of the ingredients are listed.

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

None of the ingredients are listed.

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

None of the ingredients are listed.

· **Massachusetts State Right To Know List**

120-92-3 Cyclopentanone

107-98-2 1-methoxy-2-propanol

· **New Jersey State Right To Know List**

120-92-3 Cyclopentanone

107-98-2 1-methoxy-2-propanol

· **Pennsylvania Hazardous Substances List**

120-92-3 Cyclopentanone

107-98-2 1-methoxy-2-propanol

· **California SCAQMD Rule 443.1 VOC's: See Table 1 - Section 9**· **GHS label elements** The product is classified and labelled according to the Globally Harmonized System (GHS).· **Hazard pictograms**

GHS02

GHS07

GHS08

· **Signal word** Warning· **Hazard-determining components of labelling:**

1-methoxy-2-propanol

Cyclopentanone

· **Hazard statements**

H226 Flammable liquid and vapor.

H315 Causes skin irritation.

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- H319 Causes serious eye irritation.
- H335-H336 May cause respiratory irritation. May cause drowsiness or dizziness.
- H373 May cause damage to the central nervous system, the kidneys and the liver through prolonged or repeated exposure. Route of exposure: Oral, Inhalative and Dermal.
- **Precautionary statements**
- P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
- P260 Do not breathe dust/fume/gas/mist/vapours/spray.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- P233 Keep container tightly closed.
- P312 Call a POISON CENTER or doctor/physician if you feel unwell.
- 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.
- **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 MSDS:** Product safety department
- **Contact:** Mr. Weber
- **Last Revision Date:**
8/20/2013 Revised hazard classification and precautionary statements. Updated component toxicology data and US State Right to Know listings.
- **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 Organization
- 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
- DOT: US Department of Transportation
- IATA: International Air Transport Association
- ACGIH: American Conference of Governmental Industrial Hygienists
- 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