

## 1 Identification

· **Product identifier**

· **Trade name:** 50 PMMA Series Resists in Anisole

· **Product number:**

M530001, M530002, M530003, M530004, M530005, M530506, M530007, M530508, M530009, M530010, M530511, M530012, M530030

· **Application of the substance / the mixture** Photoresist

· **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

· **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

Flam. Liq. 3 H226 Flammable liquid and vapor.



GHS07

Acute Tox. 4 H332 Harmful if inhaled.

Skin Irrit. 2 H315 Causes skin irritation.

Eye Irrit. 2A H319 Causes serious eye irritation.

STOT SE 3 H335 May cause respiratory irritation.

· **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:**

Anisole  
 Poly(methyl methacrylate-co-methacrylic acid)

(Contd. on page 2)

Printing date 08/12/2019

Reviewed on 08/12/2019

**Trade name: 50 PMMA Series Resists in Anisole**

(Contd. of page 1)

**Hazard statements**

- H226 Flammable liquid and vapor.
- H332 Harmful if inhaled.
- H315 Causes skin irritation.
- H319 Causes serious eye irritation.
- H335 May cause respiratory irritation.

**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+P340 IF INHALED: 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 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)**

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



HEALTH	1	Health = 1
FIRE	2	Fire = 2
REACTIVITY	0	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:**

100-66-3	Anisole	70-100%
	 Flam. Liq. 3, H226;  Acute Tox. 4, H332; Skin Irrit. 2, H315; Eye Irrit. 2A, H319; STOT SE 3, H335	

(Contd. on page 3)

Printing date 08/12/2019

Reviewed on 08/12/2019

**Trade name: 50 PMMA Series Resists in Anisole**

(Contd. of page 2)

**· Additional Components:**

25086-15-1	Poly(methyl methacrylate-co-methacrylic acid)	1-30%
	⚠ Skin Irrit. 2, H315; Eye Irrit. 2A, H319; STOT SE 3, H335	

#### 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

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.

Ensure adequate ventilation

Keep away from ignition sources

**· 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

(Contd. on page 4)

Printing date 08/12/2019

Reviewed on 08/12/2019

**Trade name: 50 PMMA Series Resists in Anisole**

(Contd. of page 3)

- **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.
  - Prevent formation of aerosols.
  - Use only in well ventilated areas.
  - Use only under yellow light
- **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 inert atmosphere or keep well sealed to prevent the formation of peroxides and other oxidation products.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:**
  - Keep container tightly sealed.
  - Protect from exposure to the light.
  - Store in a cool place. Heat will increase pressure and may lead to the receptacle bursting.
- **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:**
  - 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 that were valid during the creation were used as basis.
- **Exposure controls**
- **Personal protective equipment:**
- **General protective and hygienic measures:**
  - Wash hands before breaks and at the end of work.
  - Keep away from food and beverages.
  - Immediately remove all soiled and contaminated clothing.
  - Avoid contact with the eyes and skin.
- **Respiratory equipment:** Use suitable respiratory protective device in case of insufficient ventilation.

(Contd. on page 5)

Printing date 08/12/2019

Reviewed on 08/12/2019

**Trade name: 50 PMMA Series Resists in Anisole**

(Contd. of page 4)

**· 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

Fluorocarbon rubber (Viton)

**· 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:**

<b>Form:</b>	Liquid
<b>Color:</b>	Clear to light yellow
<b>· Odor:</b>	Strong
<b>· Odor threshold:</b>	Not determined.

**· pH-value:** Not determined.

**· Change in condition**

<b>Melting point/Melting range:</b>	Undetermined.
<b>Boiling point/Boiling range:</b>	184 °C (363.2 °F)

**· Flash point:** 43 °C (109.4 °F)

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

**· Ignition temperature:** 475 °C (887 °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:**

<b>Lower:</b>	Not determined.
<b>Upper:</b>	Not determined.

**· Vapor pressure at 20 °C (68 °F):** 0.4 hPa (0.3 mm Hg)

**· Density:** Not determined.

**· Relative density** Not determined.  
See Table 1 Other Information

**· Vapor density** Not determined.

(Contd. on page 6)

Printing date 08/12/2019

Reviewed on 08/12/2019

**Trade name: 50 PMMA Series Resists in Anisole**

(Contd. of page 5)

 · **Evaporation rate** Not determined.

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

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

 · **Viscosity:**

   **Dynamic:** Not determined.

   **Kinematic:** Not determined.

 · **Other information** TABLE 1. Product specific gravity and VOC data.

Name	Number	Sp. Grav.	Vol. (%by wt.)	VOC (g/L)
50A1	M530001	0.998	99	990
50A2	M530002	0.999	98	980
50A3	M530003	1.000	97	970
50A4	M530004	1.001	96	960
50A5	M530005	1.003	95	950
50A6	M530506	1.005	94	945
50A7	M530007	1.006	93	935
50A8	M530508	1.009	92	930
50A9	M530009	1.010	91	920
50A10	M530010	1.013	90	910
50A11	M530511	1.015	89	905
50A12	M530012	1.016	88	895
50A30	M530030	1.034	70	725

## 10 Stability and reactivity

- **Reactivity** No further relevant information available.
- **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.  
 Contact with incompatible materials.
- **Incompatible materials:** Strong Oxidizing Agents, Strong Acids, Strong Bases
- **Hazardous decomposition products:**  
 Carbon monoxide and carbon dioxide  
 Phenol  
 methyl methacrylate

## 11 Toxicological information

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

 · **LD/LC50 values that are relevant for classification:**
**100-66-3 Anisole**

Oral	LD50	3700 mg/kg (Rat)
Dermal	LD50	>5000 mg/kg (rabbit)

(Contd. on page 7)

Printing date 08/12/2019

Reviewed on 08/12/2019

**Trade name: 50 PMMA Series Resists in Anisole**

(Contd. of page 6)

- **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:**

- **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:**

**100-66-3 Anisole**

EC50/24 h	40 mg/l (daphnia magna)
EC50/96 hr	162 mg/l (green algae)
LC50/48 hr	120 mg/L (Cyprinus carpio (common carp))

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

(Contd. on page 8)





Printing date 08/12/2019

Reviewed on 08/12/2019

**Trade name: 50 PMMA Series Resists in Anisole**

(Contd. of page 7)

### 14 Transport information

· <b>UN-Number</b>	
· <b>DOT, ADR, IMDG, IATA</b>	UN1866
· <b>UN proper shipping name</b>	
· <b>DOT, ADR</b>	Resin solution
· <b>IMDG, IATA</b>	RESIN SOLUTION
· <b>Transport hazard class(es)</b>	
· <b>DOT</b>	
	
· <b>Class</b>	3 Flammable liquids
· <b>Label</b>	3
· <b>ADR, IMDG, IATA</b>	
	
· <b>Class</b>	3 Flammable liquids
· <b>Label</b>	3
· <b>Packing group</b>	
· <b>DOT, ADR, IMDG, IATA</b>	III
· <b>Environmental hazards:</b>	
· <b>Marine pollutant:</b>	No
· <b>Special precautions for user</b>	Warning: Flammable liquids
· <b>Danger code (Kemler):</b>	30
· <b>EMS Number:</b>	F-E,S-D
· <b>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</b>	Not applicable.
· <b>UN "Model Regulation":</b>	UN1866, Resin solution, 3, III

### 15 Regulatory information

· <b>Safety, health and environmental regulations/legislation specific for the substance or mixture</b>
· <b>Sara</b>
· <b>Section 355 (extremely hazardous substances):</b>
None of the ingredients are listed.
· <b>Section 313 (Specific toxic chemical listings):</b>
None of the ingredients is listed.
· <b>TSCA (Toxic Substances Control Act):</b> All ingredients are listed or comply with TSCA regulations.

(Contd. on page 9)



Printing date 08/12/2019

Reviewed on 08/12/2019

**Trade name: 50 PMMA Series Resists in Anisole**

(Contd. of page 8)

**· 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.

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

100-66-3 | Anisole

**· California SCAQMD Rule 443.1 VOC's: See Table 1 - Section 9**
**· 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:**

Anisole

Poly(methyl methacrylate-co-methacrylic acid)

**· Hazard statements**

H226 Flammable liquid and vapor.

H332 Harmful if inhaled.

H315 Causes skin irritation.

H319 Causes serious eye irritation.

H335 May cause respiratory irritation.

**· 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+P340 IF INHALED: 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.

(Contd. on page 10)

Printing date 08/12/2019

Reviewed on 08/12/2019

**Trade name: 50 PMMA Series Resists in Anisole**

(Contd. of page 9)

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 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.

· **Date of preparation / last revision** 08/12/2019 / 2

· **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 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

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)

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

NIOSH: National Institute for Occupational Safety

OSHA: Occupational Safety & Health

TLV: Threshold Limit Value

PEL: Permissible Exposure Limit

REL: Recommended Exposure Limit

Flam. Liq. 3: Flammable liquids – Category 3

Acute Tox. 4: Acute toxicity – Category 4

Skin Irrit. 2: Skin corrosion/irritation – Category 2

Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A

STOT SE 3: Specific target organ toxicity (single exposure) – Category 3