

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

· 1.1 Product identifier

· **Trade name:** 200 PMMA Series Resists in Anisole

· **Article number:**

M730002, M730003, M730004, M730005, M730505, M730006, M730506, M730007, M730008, M730009, M730010, M730011, M730015

· 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
 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

Acute Tox. 4 H332 Harmful if inhaled.

Skin Irrit. 2 H315 Causes skin irritation.

Eye Irrit. 2 H319 Causes serious eye irritation.

STOT SE 3 H335 May cause respiratory 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

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 · **Signal word** Warning

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

Anisole

 · **Hazard statements**

H226 Flammable liquid and vapour.

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, 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+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.

 · **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: 100-66-3	Anisole	80-100%
EINECS: 202-876-1	⚠ Flam. Liq. 3, H226; ⚠ Acute Tox. 4, H332; Skin Irrit. 2, H315; Eye Irrit. 2, H319; STOT SE 3, H335	

 · **Additional Components:**

9010-88-2	Poly(methyl methacrylate-co-ethyl acrylate)	1-20%
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 · **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**

 · **After inhalation:**

Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.

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- **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:** 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.

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).
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**
Use only in well ventilated areas.
Ensure good ventilation/exhaust at the workplace.
Prevent formation of aerosols.
Use only under yellow light
- **Information about fire - and explosion protection:**
Keep ignition sources away - Do not smoke.
Protect against electrostatic charges.

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- Use explosion-proof apparatus / fittings and spark-proof tools.
- **7.2 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 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

- **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:**
 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:** Wash hands before breaks and at the end of work.
- **Respiratory protection:** Use suitable respiratory protective device in case of insufficient ventilation.
- **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
- **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:** According to product specification
- **Odour:** Strong

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· Odour threshold:	Not determined.																																																																						
· pH-value:	Not determined.																																																																						
· Change in condition Melting point/freezing point: Initial boiling point and boiling range:	Undetermined. 184 °C																																																																						
· Flash point:	43 °C																																																																						
· Flammability (solid, gas):	Not applicable.																																																																						
· Ignition temperature:	475 °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: Upper:	Not determined. Not determined.																																																																						
· Vapour pressure at 20 °C:	0.4 hPa																																																																						
· Density: · Relative density · Vapour density · Evaporation rate	Not determined See Table 1 Other Information Not determined. Not determined.																																																																						
· Solubility in / Miscibility with water:	Not miscible or difficult to mix.																																																																						
· Partition coefficient: n-octanol/water:	Not determined.																																																																						
· Viscosity: Dynamic: Kinematic:	Not determined. Not determined.																																																																						
· 9.2 Other information	<table border="1"> <thead> <tr> <th>Name</th> <th>Number</th> <th>Sp.Grav.</th> <th>Vol.(%by wt.)</th> <th>VOC(g/L)</th> </tr> </thead> <tbody> <tr><td>200A2</td><td>M730002</td><td>0.996</td><td>98</td><td>975</td></tr> <tr><td>200A3</td><td>M730003</td><td>0.999</td><td>97</td><td>970</td></tr> <tr><td>200A4</td><td>M730004</td><td>1.000</td><td>96</td><td>960</td></tr> <tr><td>200A5</td><td>M730005</td><td>1.001</td><td>95</td><td>950</td></tr> <tr><td>200A5.5</td><td>M730505</td><td>1.001</td><td>94.5</td><td>945</td></tr> <tr><td>200A6</td><td>M730006</td><td>1.004</td><td>94</td><td>940</td></tr> <tr><td>200A6.5</td><td>M730506</td><td>1.005</td><td>93.5</td><td>940</td></tr> <tr><td>200A7</td><td>M730007</td><td>1.007</td><td>93</td><td>935</td></tr> <tr><td>200A8</td><td>M730008</td><td>1.009</td><td>92</td><td>930</td></tr> <tr><td>200A9</td><td>M730009</td><td>1.011</td><td>91</td><td>920</td></tr> <tr><td>200A10</td><td>M730010</td><td>1.013</td><td>90</td><td>910</td></tr> <tr><td>200A11</td><td>M730011</td><td>1.014</td><td>89</td><td>900</td></tr> <tr><td>200A15</td><td>M730015</td><td>1.018</td><td>85</td><td>865</td></tr> </tbody> </table>	Name	Number	Sp.Grav.	Vol.(%by wt.)	VOC(g/L)	200A2	M730002	0.996	98	975	200A3	M730003	0.999	97	970	200A4	M730004	1.000	96	960	200A5	M730005	1.001	95	950	200A5.5	M730505	1.001	94.5	945	200A6	M730006	1.004	94	940	200A6.5	M730506	1.005	93.5	940	200A7	M730007	1.007	93	935	200A8	M730008	1.009	92	930	200A9	M730009	1.011	91	920	200A10	M730010	1.013	90	910	200A11	M730011	1.014	89	900	200A15	M730015	1.018	85	865
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SECTION 10: Stability and reactivity

 · **10.1 Reactivity** No further relevant information available.

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- **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**
Heat, flames and sparks. Extremes of temperature and direct sunlight.
Contact with incompatible materials.
- **10.5 Incompatible materials:** Strong Oxidizing Agents, Strong Acids, Strong Bases
- **10.6 Hazardous decomposition products:**
Carbon monoxide and carbon dioxide
Phenol
methyl methacrylate

SECTION 11: Toxicological information

· 11.1 Information on toxicological effects

- **Acute toxicity**
Harmful if inhaled.

· LD/LC50 values relevant for classification:

Oral	LD50	1200 mg/kg (Rat)
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100-66-3 Anisole

Oral	LD50	3700 mg/kg (Rat)
Dermal	LD50	>5000 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.
- **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** Based on available data, the classification criteria are not met.
- **STOT-single exposure**
May cause respiratory irritation.
- **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:

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))

- **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 2 (German Regulation) (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.
- **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 | UN1866 |
| · ADR, IMDG, IATA | |
| · 14.2 UN proper shipping name | RESIN SOLUTION |
| · ADR, IMDG, IATA | |
| · 14.3 Transport hazard class(es) | |
| · ADR, IMDG, IATA | |
|  | |
| · Class | 3 Flammable liquids. |
| · Label | 3 |
| · 14.4 Packing group | III |
| · ADR, IMDG, IATA | |
| · 14.5 Environmental hazards: | |
| · Marine pollutant: | No |
| · 14.6 Special precautions for user | Warning: Flammable liquids. |
| · Danger code (Kemler): | 30 |
| · EMS Number: | F-E,S-D |
| · Stowage Category | A |
| · 14.7 Transport in bulk according to Annex II of Marpol and the IBC Code | Not applicable. |

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· Transport/Additional information:
· ADR

- **Limited quantities (LQ)** 5L
- **Excepted quantities (EQ)** Code: E1
Maximum net quantity per inner packaging: 30 ml
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
Maximum net quantity per inner packaging: 30 ml
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.

H319 Causes serious eye irritation.

H332 Harmful if inhaled.

H335 May cause respiratory irritation.

· 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)

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)

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Trade name: 200 PMMA Series Resists in Anisole*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**STOT SE 3: Specific target organ toxicity (single exposure) – Category 3**(Contd. of page 8)*