EM RESIST LTD

SPECIALISTS IN RESIST TECHNOLOGY

SAFETY DATA SHEET

Creation Date 21-May-2011 **Revision Date** 03-February-2023

SECTION 1: Identification

Product Name:	**PMMA series electron beam resist**
Identified Uses:	Positive tone electron beam resist
Company	EM Resist Ltd. Media House Adlington Park Macclesfield SK10 4NL UNITED KINGDOM
Telephone	+44 (0)1625 813723
E-mail Address	info@emresist.com
Emergency Phone #	+44 (0)1625 813723

SECTION 2: Hazards identification

Classification

Flammable liquids	(Category 3)
Specific target organ toxicity	(Category 3)
Specific target organ toxicity	(Category 2)

Label Elements

Pictogram

Signal Word Warning

Hazard statement(s) :

H226	Flammable liquid and vapour
H302	Harmful if swallowed
H315	Causes skin irritation
H319	Causes serious eye irritation
H336	May cause drowsiness or dizziness

Precautionary statement(s):

P210	Keep away from heat/sparks/open flames/hot surfaces – No smoking
P261	Avoid breathing dust/fume/gas/mist/vapours/spray
P280	Wear protective gloves/protective clothing
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTRE or doctor/physician
P303 + P361 + P353	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with

			water/shower.
H373	May cause damage to organs through prolonged or repeated exposure	P271	Use only outdoors or in a well-ventilated area.
		P304 + P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
		P370 + P378	In case of fire: Use CO_2, dry chemical or foam for extinction.
		P403	Store in a well-ventilated place. Keep container tightly closed
		P501	Dispose of contents/container to an approved waste disposal plant

SECTION 3: Composition / information on ingredients

Component	Weight %
Anisole CAS: 100-66-3	<=99%
Methyl methacrylate polymer CAS: 9011-14-7	1-15%

SECTION 4: First-aid measures

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Obtain medical attention

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Get medical attention if symptoms occur.

Inhalation Move to fresh air. If breathing is difficult give oxygen. Get medical attention if symptoms occur.

Ingestion Do not induce vomiting. Obtain medical attention

Most important symptoms/effects Breathing difficulties. Symptoms of overexposure may be headaches, dizziness, tiredness, nausea and vomiting.

SECTION 5: Fire-fighting measures

Suitable Extinguishing Media	User water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Cool closed containers exposed to fire with water spray.
Flash Point	43°C / 109.4°F
Autoignition Temperature	475°C / 887°F
Specific Hazards Arising from the Chemical	Flammable. Risk of ignition. Vapours may form explosive mixtures with air. Vapours may travel to source of ignition and flash back. Thermal decomposition can lead to release of irritating gases and vapours. Keep product and empty container away from heat and sources of ignition.
Hazardous Combustion Products	Carbon monoxide (CO), Carbon dioxide (CO_2), Phenols.
Protective Equipment and Precautions for Firefighters	As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear

SECTION 6: Accidental release measures

Personal Precautions	Use personal protective equipment as required. Remove all sources of ignition. Ensure adequate ventilation. Take precautionary measures against static discharges. Avoid contact with skin, eyes and clothing
Environmental Precautions	Avoid release to the environment
Methods for Containment and Clean Up	Remove all sources of ignition. Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Use spark-proof tools and explosion- proof equipment

SECTION 7: Handling and storage

Handling	Wear personal protective equipment. Keep away from open flames, hot surfaces and sources of ignition. Ensure adequate ventilation. Use spark-proof tools and explosion-proof equipment. Take precautionary measures against static discharge. Avoid contact with skin, eyes and clothing
Storage	Keep containers tightly closed in a dry, cool and well ventilated place. Keep away from heat and sources of ignition. Flammables areas

SECTION 8: Exposure controls/personal protection

Exposure Guidelines	This product does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies
Engineering Measures	Ensure adequate ventilation, especially in confined areas. Use explosion-proof electrical/ventilating/lighting/equipment. Ensure that eyewash stations and safety showers are close to the workstation location
Personal Protective Equipment	
Eye/face Protection	Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166
Skin and body protection	Wear appropriate protective gloves and clothing to prevent skin exposure.
Respiratory Protection	Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice

SECTION 9: Physical and chemical properties

Physical State	Liquid
Appearance	Clear to straw coloured
Odor	Sweet aromatic
Odor Threshold	No Information available
pH	No Information available
Melting Point/Range	-37°C / -34.6°F
Boiling Point/Range	154°C / 309.2°F @ 760 mmHg
Flash Point	43°C / 109.4°F
Evaporation Rate	No information available
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	6.3 vol %
Lower	0.34 vol %
Vapor Pressure	10 mmHg @ 42°C
Vapor Density	3.72

Relative Density	No information available
Solubility	Insoluble in water
Autoignition Temperature	475°C / 887°F
Decomposition Temperature	No information available
Partition coefficient: n-octanol/water	No information available
Viscosity	No information available

SECTION 10: Stability and reactivity

Reactive Hazard	None known, based on information available
Stability	Stable under normal conditions
Conditions to avoid	Incompatible products. Excess heat. Keep away from open flames, hot surfaces and sources of ignition
Incompatible Materials	Strong oxidising agents
Hazardous Decomposition Products	Carbon monoxide (CO), Carbon dioxide (CO2), Phenols
Hazardous Polymerisation	Hazardous polymerisation does not occur
Hazardous Reactions	May form explosive peroxides

SECTION 11: Toxicological information

Acute Toxicity

Product Information

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Anisole	Not listed	Not listed	3021 mg/m3/2h (Mouse)

Toxicologically Synergistic Products	No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation	No information available
Sensitization	No information available
Carcinogenicity	None of the components have been found to be a potential carcinogen in the Inernational Agency for Research on Cancer (IARC) Monographs or found to be a potential carcinogen by

	OSHA. None of the components are listed in the National Toxicological Program (NTP) Report on Carcinogens
Mutagenic Effects	No information available
Reproductive Effects	No information available
Developmental Effects	No information available
Teratogenicity	No information available
STOT – single exposure	Central nervous system (CNS)
STOT – repeated exposure	Liver, Kidney
Aspiration hazard	No information available
Symptoms/effects, both acute and delayed	Symptoms of overexposure may be headache, dizziness, tiredness, nausea, and vomiting
Endocrine Disruptor Information	No information available

SECTION 12: Ecological Information

Acute aquatic toxicity

Acute toxicity to fish

Component	**Details**
Anisole	48hr LC50 Cyprinus Carpio 120 mg/L

Acute toxicity to aquatic invertebrates

Component	**Details**
Anisole	24hr EC50 Daphnia magna: 40 mg/L

Acute toxicity to algae

Component	**Details**
Anisole	96hr EC50 Green Algae 162 mg/L

Specific concentration limits

These values listed below represent the percentages of ingredients of unknown toxicity
15% Acute aquatic toxicity – fish
15% Acute aquatic toxicity – aquatic invertebrates
15% Acute aquatic toxicity – algae

Chronic aquatic toxicity

Chronic toxicity to fish – no data found
Chronic toxicity to aquatic invertebrates – no data found
Chronic toxicity to algae – no data found

Persistence/Degradability

Component	**Details**
Anisole	Inherently biodegradable

Bioaccumulation

Component	Details
Anisole	Not expected to bioaccumulate

Mobility

Component	Details
Anisole	No data found

SECTION 13: Disposal Considerations

Precautions – Containers may be hazardous when empty. Since emptied containers retain product residue follow all SDS and label warnings even after container is emptied. Dispose of contents/container in accordance with local regulation.

Disposal – Comply with applicable local, state or international regulations regarding the proper disposal of this material and/or containers.

SECTION 14: Transport Information

UN-No	UN2222
Proper Shipping Name	ANISOLE SOLUTION
Hazard Class	3
Packing Group	III

SECTION 15: Regulatory Information

US and International information

Chemical Inventories:	TSCA (US) – Components are listed or comply with TSCA regulations EINECS/ELINCS/NLP (EU) – Components are listed or exempt China – Components are listed Japan – Components are listed DSL/NDSL (Canada) – Components are listed AICS (Australia) – Components are listed Korea – Components are listed Philippines – Components are listed
SARA Title III:	This product IS NOT subject to SARA Title III, Section 313 Reporting Requirements

SECTION 16: Other information

Prepared By	EM Resist Ltd.
Creation Date	21-May-2011

Revision Date	03-February-2023
Revision Summary	This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS) Change of contact details

Disclaimer

The information provided on this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.