

PGMEA

Date of Preparation: February 2004

Revision: 1

Section 1 - Chemical Product and Company Identification

Product/Chemical Name: PGMEA
Chemical Formula: C6H12O3
CAS Number: 108-65-6
Other Designations: 2-[1-methoxy]propyl acetate, propylene glycol monomethyl ether acetate, PMA
General Use: Photo resist remover (semiconductor manufacturing); solvent for solvent-based coating systems; solvent in silk screen printing inks.
Manufacturer: Kanto Corporation, 13424 N. Woodrush Way, Portland, OR 97203
Non-Emergency Contact: Customer Service, Phone (503) 283-0405, FAX (503) 240-0409

For All Transportation Emergencies Call CHEMTREC at 1-800-424-9300

Section 2 - Composition / Information on Ingredients

Ingredient Name	CAS Number	% wt
2-11-methoxypropyl acetate	108-65-6	100

Occupational Exposure Limits

OSHA PEL	ACGIH TLV	NIOSH REL
None Established	None Established	None Established

Section 3 - Hazards Identification

***** **Emergency Overview** *****

PGMEA is a clear, colorless liquid with a sweet fruity odor. It is irritating to the eyes, skin and nasal passages. High inhalation concentrations can cause CNS depression. It may form explosive peroxides and has a vapor explosion hazard.

HMIS
H 1
F 2
R 0
PPEt
tSec. 8

Potential Health Effects

Primary Entry Routes: Inhalation, skin and eye contact
Target Organs: Eyes, skin, respiratory system, kidneys, liver, central nervous system (CNS)
Acute Effects
Inhalation: May cause nose and throat irritation, coughing, and shortness of breath, drowsiness, lack of coordination, nausea, vomiting, and diarrhea.
Eye: May cause moderate eye irritation or corneal injury.
Skin: Repeated contact may cause irritation with redness. Prolonged contact over large amounts of body area may cause dizziness or drowsiness.
Ingestion: May cause gastrointestinal tract irritation or injury if large amounts are swallowed.
Carcinogenicity: IARC, NTP, and OSHA do not list PGMEA as a carcinogen.
Medical Conditions Aggravated by Long-Term Exposure: Pre-existing disorders or diseases of the eye including mucous membrane dysfunction.
Chronic Effects: None indicated.

Section 4 - First Aid Measures

Inhalation: Remove exposed person to an uncontaminated atmosphere. For severe exposure, use oxygen if a qualified operator is available and if breathing is difficult. If not breathing, give artificial respiration. Seek medical attention immediately.
Eye Contact: Gently lift eyelids and flush immediately and continuously with copious amounts of water for at least 15 minutes. Do not allow the victim to rub or keep eyes tightly shut. Consult an ophthalmologist immediately.
Skin Contact: Rinse with flooding amounts of water, while removing contaminated clothing, for at least 15 minutes. Wash with soap and water. Seek medical attention immediately. Wash clothing before reuse.
Ingestion: Never give anything by mouth to an unconscious or convulsing person. Contact a poison control center. Unless the poison control center advises otherwise, have the *conscious and alert* person drink 1 to 2 glasses of water.

After first aid, get appropriate in-plant, paramedic, or community medical support.

Section 5 - Fire-Fighting Measures

Flash Point: 108 °F (42 °C)
Flash Point Method: CC
Ignition Temperature: 631 °F (333 °C)

LEL: 1.3% v/v
UEL: 13.1% v/v

Flammability Classification: Class II combustible liquid

Extinguishing Media: Water fog or fine spray, carbon dioxide, dry chemical, or foams (ATC preferred but AFFF may be used though less effectively).

Unusual Fire or Explosion Hazards: Ignition or flashback may occur. Vapors are heavier than air and may travel a long distance to accumulate in low-lying areas. Vapors can burn in the open or explode if confined. Spills onto hot fibrous insulation may lower the auto ignition temperature.

Hazardous Combustion Products: Carbon monoxide and carbon dioxide.

Fire Fighting Instructions: *Do not use direct water stream*, may spread the fire. Flushing with water may move burning liquids which may float on water. Stay upwind of fire. Do not release runoff from fire control methods to sewers or waterways.

Fire Fighting Equipment: Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full-face piece operated in pressure-demand or positive-pressure mode.

NFPA



Section 6 - Accidental Release Measures

Small Spills: Notify appropriate personnel, isolate area and deny entry. Extinguish all ignition sources. Release can cause fire or explosions. Do not flood with water as chemical may float on the surface. Properly protected personnel should pick up small spills with an absorbent, noncombustible material.

Large Spills: Notify appropriate personnel and implement facility emergency response plan. Evacuate nonessential personnel, isolate area, and extinguish all ignition sources. Release can cause fire or explosions. Cleanup personnel should wear fully protective equipment for vapor inhalation, and skin and eye contact.

Containment: For large spills, dike far ahead of liquid spill for later disposal. Alert public of downwind explosion hazard. Check area for vapor concentration before reentering area. Do not release into sewers or waterways. Pump with explosion-proof equipment.

Cleanup: Place clean-up material in appropriate disposal containers and dispose of according to local, state and federal requirements.

Regulatory Requirements: Any release to the environment of this product may be subject to federal and/or state reporting requirements. Check with appropriate agencies.

Section 7 - Handling and Storage

Handling Precautions: Use only non-sparking tools. Properly ground containers before transferring product. Avoid static discharge. Empty containers may still contain flammable/combustible residue or vapors. Extinguish all ignition sources before purging container. Wear recommended personal protective equipment.

Storage Requirements: Store away from heat, sparks, open flame, and strong oxidizing agents. Store under nitrogen atmosphere if possible. Product will absorb water if exposed to air. Keep containers tightly closed when not in use. Store in carbon steel, stainless steel, or Teflon.

Regulatory Requirements: Follow all applicable local, state, and federal requirements.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls:

Ventilation: Provide general or local exhaust ventilation systems. Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

Administrative Controls

Respiratory Protection: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA/NIOSH-approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For emergency or non-routine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA.

Warning! Air purifying respirators do not protect workers in oxygen-deficient atmospheres. If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

Protective Clothing/Equipment: Wear chemically protective gloves, boots, aprons, and gauntlets to prevent prolonged or repeated skin contact. Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with contact lenses.

Safety Stations: Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.

Contaminated Equipment: Separate contaminated work clothes from street clothes. Launder before reuse. Remove this material from your shoes and clean personal protective equipment.

Comments: Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

Section 9 - Physical and Chemical Properties

Physical State: Colorless liquid

Odor: Sweet, fruity odor

Vapor Pressure: 3.7 mm Hg at 20 °C

Vapor Density (Air=1): 4.6

Formula Weight: 132.2 g/mol

Density: 8.081b/gal (0.968g/cm³) at 20°C

Specific Gravity (H₂O=1, at 4 °C): 0.966

Water Solubility: 19.8g / 100g at 25°C

Boiling Point: 295°F (146°C)

Freezing/Melting Point: -87°F (-66°C)

Viscosity: 0.8 mPa/s at 25°C

Refractive Index: No data

Surface Tension: 26.9 dynes/cm at 25°C

Evaporation Rate: 0.33 (n-butyl acetate = 1.0)

Section 10 - Stability and Reactivity

Stability: PGMEA is stable when properly handled and stored

Polymerization: Hazardous polymerization not expected to occur.

Chemical Incompatibilities: Strong oxidizing agents, moisture, humidity. May react with oxygen to form explosive peroxides.

Conditions to Avoid: Extended contact with air, oxygen, or moisture. Exposure to heat, flame, ignition sources, and oxidizing conditions.

Hazardous Decomposition Products: Thermal oxidative decomposition of PGMEA can produce carbon monoxide and carbon dioxide.

Section 11- Toxicological Information*

Acute Inhalation Effects: Rabbit, oral, LD₅₀: >5 gm/kg

Acute Oral Effects: Rat, oral, LD₅₀: 8532 mg/kg

Skin Effects: Rabbit, skin, LD₅₀: >5000 mg/kg

Chronic Effects: None Listed

Carcinogenicity: IARC, NTP, and OSHA do not list KBR 190 as a carcinogen.

Mutagenicity: None indicated.

Teratogenicity: Possible fetal developmental effects

* See NIOSH, *RTECS* (A189250000), for additional toxicity data.

Section 12 - Ecological Information

Ecotoxicity: Rainbow Trout LC50: 100-180mg/L; Daphnia Magna LC50: >400mg/L

Environmental Fate: Biodegradable over time with low bioconcentration potential and a high mobility rate in the soil.

Environmental Degradation: Biodegradation 84% after 28 days (OECD test No. 301F)

Section 13 - Disposal Considerations

Disposal: Dilute aqueous waste may biodegrade. Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state, and local regulations.

Disposal Regulatory Requirements: Contaminated product, soil, or water may be hazardous waste (40 CFR 261 and 29CFR 1910).

Container Cleaning and Disposal: Empty container in accordance with applicable regulations. Vapors may still be in the container after emptying presenting a possible fire or explosion hazard.

Section 14 - Transport Information

DOT Transportation Data (49 CFR 172.101):

Shipping Name: Flammable

liquid, n.o.s. (2-[1-methoxy]propyl acetate)

Hazard Class: 3

ID No.: UN 1993

Packing Group: II

Label: 3

Special Provisions (172.102):

132, T7, TP1, TP8, TP28

Packaging Authorizations

a) **Exceptions:** 173.150

b) **Non-bulk Packaging:** 173.202

c) **Bulk Packaging:** 173.242

Quantity Limitations

a) **Passenger, Aircraft, or Railcar:** 5L

b) **Cargo Aircraft Only:** 60L

Vessel Stowage Requirements

a) **Vessel Stowage:** B

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Section 15 - Regulatory Information

¹ **A Regulations:**
RCRA Hazardous Waste Number (40 CFR 261.33): D001
^f CRA Hazardous Waste Classification (40 CFR 261.21): waste(s) may show Characteristics of Ignitability
CERCLA Hazardous Substance (40 CFR 302.4): No
SARA 311/312 Codes: Immediate (Acute) Health Hazard, Fire Hazard
SARA Toxic Chemical (40 CFR 372.65): Not listed
TSCA: Yes

OSHA Regulations:
Air Contaminant (29 CFR 1910.1000, Table Z-I, Z-1-A): Not listed

Section 16 - Other Information

Revision **Notes:** Update to Sections 2, 3, 11, 12 and 14

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