# Material Safety Data Sheet

## *$ZrO_2$ in PGMEA, Bisphenol A diglycerolate dimethacrylate and Ebecryl P-115*

## 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

**Products governed by this MSDS:** PCPM-##-BPA, PCPA-##-BPA, PCPB-##-BPA, PCPG-##-BPA, PCPQ-##-BPA, PCPR-##-BPA, PC15-##-BPA, PC16-##-BPA, PC17-##-BPA, PCOPR-##-BPA, PCOPM-##-BPA. Where "##"is any numeric combination.

**Manufacturer:** **Pixelligent Technologies, LLC**
6411 Beckley St,
Baltimore, MD 21224
Phone: (443) 529-8310 Fax: (410) 631-5161
msds@pixelligent.com

**Emergency Phone Number:**
Chemtrec Domestic North America: 800-424-9300
Chemtrec International: 703-527-3887

## 2. HAZARD IDENTIFICATION

**GHS Classification**

Flammable Liquid (Category 3)
Skin irritation (Category 2)
Eye irritation (Category 2B)
Specific target organ toxicity - single exposure (Category 3)

**GHS Label elements**

Precautionary pictograms

Signal word: WARNING

Hazard statements:

| | |
|---|---|
| H226 | Flammable liquid and vapor |
| H315 | Causes skin irritation. |
| H320 | Causes eye irritation. |
| H335 + H336 | May cause respiratory irritation. May cause drowsiness or dizziness. |

Precautionary statements:
Prevention:

| | |
|---|---|
| P210 | Keep away from heat/sparks/open flames/hot surfaces – No smoking. |
| P233 | Keep container tightly closed. |
| P240 | Ground/bond containerand receiving equipment |
| P241 | Use explosion-proof electrical/ventilating/lighting equipment etc… |
| P242 | Use only non-sparking tools. |
| P243 | Take precautionary measures against static discharge. |
| P261 | Avoid breathing dust/fume/gas/mist/vapours/spray. |
| P264 | Wash hands thoroughly after handling. |
| P271 | Use only outdoors or in a well-ventilated area |

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

Response:
P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position 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.
P312 Call a POISON CENTER or doctor/physician if you feel unwell.
P337+P313 If eye irritation persists: Get medical advice/attention.
P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P370+P378 In case of fire: Use dry sand, foam, carbon dioxide or dry chemical powder extinguisher for extinction.
P302+P352: IF ON SKIN: Wash with plenty of water. If irritation persists, repeat flushing.
P332+P313: If skin irritation occurs: Get medical advice/attention.
P362+P364 Take off contaminated clothing and wash it before reuse

Storage:
P403+P235 Store in a well ventilated place. Keep cool.
P403+P233 Store in a well ventilated place. Keep container tightly closed

Disposal:
P501 Dispose of contents/container in accordance with all national and local regulations.

## 3. COMPOSITION/INFORMATION OF INGREDIENTS

| Chemical Name | CAS# | % |
|---|---|---|
| 2-(1-Methoxy)propyl acetate (Propylene glycol monomethyl ether acetate, PGMEA) | 108-65-6 | 30-50 |
| Zirconium dioxide (in nanocrystal form) | 1314-23-4 | 25-45 |
| (1-methylethylidene)bis[4,1-phenyleneoxy(2-hydroxy-3,1-propanediyl)] bismethacrylate | 1565-94-2 | 2-45 |
| Capping agent | Trade Secret | 4-10 |
| Ebecryl P-115 | NA | 0.1-3 |
| Mequinol | 150-76-5 | 0.5-2.5 |
| Hydroquinone | 123-31-9 | 0.1-0.5 |

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard found at 29 CFR 1910.1200. Exact concentrations are being withheld due to trade secrets and due to variability of concentrations covering the range of products indicated above.

## 4. FIRST AID MEASURES

**Consult a physician. Show this MSDS to the doctor.**

**Eye**
Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 15 minutes, while holding the eyelid(s) open. Obtain medical advice.

**Skin**
Remove contaminated clothing, shoes, and leather goods. Quickly and gently, blot or brush away excess chemical. Wash gently and thoroughly with lukewarm gently flowing water and non-abrasive soap for 15 minutes. If irritation persists, repeat flushing. Obtain medical advice. Completely decontaminate clothing, shoes and leather goods before reuse or discard.

**Inhalation**
Move person to fresh air. Give artificial respiration if needed. If breathing is difficult, qualified personnel should administer oxygen. Get immediate medical attention.

**Ingestion**

Do not induce vomiting unless directed to do so by medical personnel. Get immediate medical attention.

## 5. FIRE AND EXPLOSION DATA

**Extinguishing Media**
Use water fog or spray, universal foam, carbon dioxide or dry chemical. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

**Special Fire Fighting Procedures**
Wear an approved, positive pressure, self-contained breathing apparatus and full protective clothing. Cool fire exposed containers with water.

**Unusual Fire Hazards**
Vapors are heavier than air and may travel along surfaces to remote ignition sources and flash back. As with any ether, 2-(1-Methoxy) propyl acetate (PGMEA) may form highly reactive peroxides upon contact with air.

**Hazardous Decomposition Products**
Oxides of carbon

## 6. ACCIDENTAL RELEASE MEASURES

Remove all ignition sources. Vapor explosion hazard. Wear appropriate protective clothing to prevent eye and skin contact. Ventilate area. Keep out of sewers. Isolate area and keep unnecessary and unprotected personnel from entering the area. Cover with an inert absorbent material and collect into an appropriate container for disposal. Report spills and releases as required to appropriate authorities.

## 7. HANDLING AND STORAGE

**Handling**
Avoid breathing vapors, aerosols and mists. Use with adequate ventilation. Avoid contact with the eyes, skin and clothing. Keep product away from heat, sparks, flames and all other sources of ignition.
Vapors are heavier than air and may travel long distances and accumulate in low lying areas. Ignition and/or flashback can occur.
Electrically ground and bond all equipment. Use of non-sparking or explosion-proof equipment may be necessary. Empty containers can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers.
This product is a poor conductor of electricity and can become electrostatically charge, even in bonded or grounded equipment. Operations that can promote accumulation of static charges include but are not limited to mixing, filtering, pumping at high flow rates, splash filing, creating mists or sprays, container cleaning, sampling, gauging, etc.
If dried, use PPE in the presence of solid.

**Storage**
Store in a cool, dry, well-ventilated location away from incompatible materials. Keep containers closed when not in use. Minimize sources of ignition. Do not store in aluminum, copper, galvanized iron or steel.
Recommended storage temperature: 2 - 8C

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

| Component | Exposure Limits |
|---|---|
| 2-(1-Methoxy)propyl acetate (PGMEA) | 50 ppm TWA (WEEL) |
| Zirconium compounds | 5 mg/m$^3$ TWA (OSHA) |
| (1-methylethylidene)bis[4,1-phenyleneoxy(2-hydroxy-3,1-propanediyl)] bismethacrylate | None Established |
| Capping agent (Trade Secret) | None Established |
| Ebecryl P-115 | None Established |
| Mequinol | 5 mg/m$^3$ TWA (OSHA) |
| Hydroquinone | 2 mg/m$^3$ TWA PEL (OSHA) |

**Respiratory Protection**
If needed, an approved respirator with organic vapor/P100/N100 cartridges may be used. For higher exposures, a supplied air respirator

may be required. Respirator selection and use should be based on contaminant type, form and concentration. Follow applicable regulations and good Industrial Hygiene practice. Use with adequate general or local exhaust ventilation to maintain exposure levels below the occupational exposure limits.

**Skin Protection**
Impervious gloves are recommended. Preferred materials include butyl rubber, polyethylene, chlorinated polyethylene or ethylvinyl alcohol laminate. Consult with glove supplier.

**Eye Protection**
Chemical safety goggles recommended.

**Other Protective Equipment**
Impervious clothing is required to prevent skin contact and contamination of personal clothing. If dried, use PPE in the presence of solid.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Properties shown are for 2-(1-Methoxy)propyl acetate.

**Appearance and Odor:** Liquid with a sweet odor.

| | | | |
|---|---|---|---|
| **pH:** | Not available | **Specific Gravity:** | 0.97 g/cm3 |
| **Boiling Point:** | 145-146 °C | **Melting Point:** | Not available |
| **Vapor Pressure:** | 3.7 mmHg @ 20 °C | **Water Solubility:** | Partially soluble |
| **Vapor Density:** | 4.6 (Air = 1) | **Evaporation Rate:** | Not available |
| **Flash Point:** | 46 °C (115 °F) | **Flammable Limits: LEL:** | 1.5 vol% |
| **Flammable Limits:** | 7.0 vol% | | |
| **UEL:** | | | |

## 10. STABILITY AND REACTIVITY

**Incompatibility/Conditions to Avoid**
Strong oxidizing agents, strong acids, strong alkalis, reducing agents. Keep away from heat, sparks, flames and other sources of ignition.

**Hazardous Decomposition Products**
Combustion will produce oxides of carbon and unknown materials.

## 11. TOXICOLOGICAL INFORMATION

**Health Hazards:**

Eye: May cause eye irritation. May cause pain disproportionate to the level of irritation to the eye. Symptoms may also include redness, tearing and blurriness. May cause corneal injury.
Skin: May cause skin irritation. Prolonged contact with very large amounts may cause dizziness or drowsiness due to absorption of solvent.
Inhalation: No adverse effects expected.
Ingestion: Toxicity is unknown.

Repeated/Chronic Exposure: In animals, effects have been reported on the following organs: liver, kidney, nasal tissue. The relevance to humans is not known. None of the chemicals is this product is listed by OSHA, NTP or IARC. One component (Hydroquinone) has limited evidence of carcinogenicity in animals.

Target organs: liver, eyes, skin, kidney

**No toxicological data available for product**

## 12. ECOLOGICAL INFORMATION

**No data available for product**

## 13. DISPOSAL INFORMATION

Dispose of by incineration.
Any leftover product is to be disposed of by incineration. Disposal in accordance with all local, state and federal regulations (40CFR260-268). Contaminated packaging is to be triple rinsed with appropriate organic solvent/monomer prior to being disposed of. The contaminated rinse solvent/monomer is to be treated as hazardous waste and must be disposed of by incineration. No other disposal method is acceptable.

## 14. TRANSPORT INFORMATION

| | |
|---|---|
| **DOT Shipping Name:** | Esters, n.o.s (2-methoxy-1-methylethyl acetate Mixture) |
| **DOT Hazard Class:** | 3, PG III |
| **UN Number:** | UN3272 |
| **Reportable Quantity:** | none |
| | |
| **IATA Shipping Name:** | Esters, n.o.s (2-methoxy-1-methylethyl acetate Mixture) |
| **IATA Hazard Class:** | 3, PG III |
| **UN Number:** | UN3272 |

## 15. REGULATORY INFORMATION

All components of this product are included on the TSCA Inventory or are not required to be listed.

## 16. OTHER INFORMATION

MSDS Date of Preparation: 05/07/2015

**Emergency Overview**
Liquid with a sweet odor. Flammable liquid and vapor. May cause eye, skin, and respiratory irritation. May cause headache, dizziness, nausea and other symptoms of central nervous system depression.

Glossary:
IARC = International Agency for Research of Cancer
NTP = National Toxicology Program
OSHA = Occupational Safety and Health Act
TSCA = Toxic substances Control Act

To the best of our knowledge, the information contained herein is accurate. However, neither Pixelligent Technologies nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of the suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although, certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.