

# Designer Molecules, Inc.

## Material Safety Data Sheet

Product: PEM-665  
MSDS ID: R1188

Revised Date: 02/02/10  
Replaces Date: 06/11/09

### 1. General Information

Trade Name: PEM-665  
Product Code: R1188  
Product Type: Polyester Methacrylate Oligomer  
Company: Designer Molecules, Inc.  
10080 Willow Creek Rd.  
San Diego, CA 92131  
Telephone: 858-348-1122

Emergency phone number (spill, leak, fire, exposure or accident):  
US Domestic 800-424-9300 (CHEMTREC)  
International +1 703-527-3887

### 2. Composition Information

COMPONENT	CAS#	CONCENTRATION
Modified Polyester Resin	Proprietary	> 90%
Toluene	108-88-2	< 2%

### 3. Hazards Identification

#### EMERGENCY OVERVIEW:

WARNING  
EYE IRRITANT  
HARMFUL IF SWALLOWED  
SKIN SENSITIZER  
Clear to light yellow liquid  
Mild odor

#### HMIS ratings (scale 0 – 4)

Hazardous Materials  
Identification System  
Health (acute effects) = \* 2  
Flammability = 1  
Physical = 0  
Personal Protection = B

#### POTENTIAL HEALTH EFFECTS:

##### EFFECTS OF SINGLE ACUTE OVEREXPOSURE:

**INHALATION:** Short-term harmful health effects are not expected from vapor generated at ambient temperature. Vapors and/or aerosols that may be formed at elevated temperatures may be irritating to eyes and respiratory tract. Avoid breathing vapors or mists.

**EYE CONTACT:** May cause eye irritation. Contact with eyes causes redness and discomfort that is transient.

**SKIN CONTACT:** Brief contact may cause slight irritation with itching and local redness. Repeated and/or prolonged contact may cause skin sensitization.

**SKIN ABSORPTION:** No evidence of harmful effects from available information.

**SWALLOWING:** Ingestion may cause abdominal discomfort, nausea, vomiting, and diarrhea.

### 4. First Aid Measures

**SWALLOWING:** Do not induce vomiting. Give person large amounts of water. Get immediate medical attention.

**SKIN CONTACT:** Wash area with soap and water. Remove contaminated clothing and shoes. Wash or clean before reuse.

**INHALATION:** Remove person to fresh air. If breathing has stopped, perform artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**EYE CONTACT:** Flush with water for 15 minutes. Get immediate medical attention.

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### NOTES TO PHYSICIAN:

There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient.

## 5. Fire and Explosion Hazard Data

**FLASH POINT (method):** > 400°F, (closed cup)  
**EXTINGUISHER METHOD:** Water, CO<sub>2</sub>, foam, dry chemical  
**SPECIAL FIRE-FIGHTING PROCEDURES:**

Fire fighters should wear NIOSH/MSHA approved pressure demand self-contained breathing apparatus. Decontaminate or discard any clothing that may contain chemical residues.

### UNUSUAL FIRE AND EXPLOSION HAZARDS:

Do not enter fire area without proper protection. See Section 10, Reactivity Data, for decomposition products possible. Fight fire from safe distance and protected location. Heat/impurities may increase temperature/build pressure/rupture closed containers, spreading fire, increasing risk of burns/injuries. Water may be ineffective in firefighting due to low solubility. Use water spray/fog for cooling. Pressure relief system may plug with solids, increasing risk of overpressure.

## 6. Accidental Release Measures

### STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Promptly absorb spill. Remove sources of ignition. Cover drains to prevent entry into waterways. Wear personal protective equipment (clothing and gloves) when handling spilled materials.

### PERSONAL PRECAUTIONS:

Wear suitable protective equipment.

### ENVIRONMENTAL PRECAUTIONS:

This product is essentially insoluble in water. This material is resistant to rapid biodegradation. May be toxic to aquatic life. Avoid runoff to waterways and sewers.

## 7. Handling and Storage

**HANDLING:** Avoid contact with eyes.  
Keep container closed.  
Use with adequate ventilation.  
Wash thoroughly after handling.

**VENTILATION:** General (mechanical) room ventilation is expected to be satisfactory for use at room temperature. Special, local ventilation is recommended at points where vapors generated at high temperatures may be vented to the workplace air.

**STORAGE:** Store at 5°C away from incompatible materials identified in the *Stability and Reactivity Section*.

## 8. Exposure Controls and Personal Protection Measures

COMPONENT	EXPOSURE LIMITS		
	<u>ACGIH</u>	<u>OSHA</u>	<u>MFG Working Standard</u>
Toluene	20 ppm TWA	300 ppm Ceiling 200 ppm TWA	

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### PERSONAL PROTECTION:

Respiratory: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use. If a respirator is used, a NIOSH/MSHA approved respirator with organic vapor/dust-mist fume filters represents the minimum level of respiratory protection.

Hands: Solvent impermeable gloves.

Eyes: Chemical safety goggles.

Skin: Chemical-resistant clothing.

### OTHER PROTECTIVE EQUIPMENT:

Wear disposable protective clothing to facilitate recovery of any materials spilled.

### ENGINEERING CONTROLS:

Ventilation:

Local Exhaust:

Fume hood at point of generation with sufficient exhaust to remove material from breathing zone.

### EXPOSURE LIMITS:

None established by OSHA, ACGIH or UCC

## 9. Physical / Chemical Characteristics

### APPEARANCE:

Physical State:	Viscous Liquid
Color:	Clear to light yellow
Odor:	Mild odor

### OTHER PROPERTIES:

Boiling Point:	Not determined.
Melting Point:	Not determined.
pH:	Not currently available
Density (g/CC):	~1.00
Vapor Pressure (mmHg):	Not determined
Vapor Density (air=1):	Not determined
Volatile Organic Compounds:	< 2%
Solubility in water:	Not determined
Evaporation rate:	Not determined
Percent volatile (weight):	≈ 2%
Decomposition Temperature:	Not determined

## 10. Reactivity Hazard Data

### STABILITY:

Stable

### CONDITIONS TO AVOID:

Elevated temperatures in the presence of initiators

### INCOMPATIBLE MATERIALS:

Incompatible with strong oxidizing, strong reducers, free radical initiators, inert gases, oxygen scavengers.

### HAZARDOUS DECOMPOSITION PRODUCTS:

Acrid smoke-fumes/carbon monoxide/carbon dioxide and perhaps other toxic vapors may be released during a fire involving this product.

### HAZARDOUS POLYMERIZATION:

Will not occur during normal storage and handling.

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### 11. Toxicological Information

**ROUTE OF ENTRY:** Inhalation; Ingestion; Eye Contact; Skin Contact  
**CARCINOGEN:** There is no evidence that this product poses a carcinogenic risk under normal conditions of handling and use.

#### PRODUCT TOXICOLOGY

**PRODUCT INFORMATION:** Low acute toxicity under normal handling and use.

**ACUTE EFFECTS OF EXPOSURE:** May cause irritation to eyes and respiratory system. High exposure may cause anesthesia and irregular heartbeat due to the heart's increased sensitivity to adrenaline

**CHRONIC EFFECTS OF EXPOSURE:** The toxicological properties of this product have not been fully evaluated. Use of good industrial hygiene practices is required. Avoid direct contact with skin or eyes. Do not ingest or inhale.

**TARGET ORGANS:** Eyes, skin

**POSSIBLE BIRTH DEFECT HAZARD:** Yes

#### COMPONENT ORAL TOXICITY

Toluene Oral LD50: Rat 636 mg/kg  
gastrointestinal tract. Aspiration of the product into the lungs following ingestion may cause pulmonary injury leading to pneumonitis. May cause nausea, vomiting and diarrhea.

#### NOTES ON ORAL TOXICITY

Ingestion may cause irritation of the

#### COMPONENT DERMAL TOXICITY

Toluene Dermal LD50: Rabbit 12124 mg/kg  
skin. Repeated or prolonged contact may cause defatting of the skin resulting in dryness, cracking and dermatitis.

#### NOTES ON DERMAL TOXICITY

Mild irritant to skin. May be absorbed through

#### COMPONENT INHALATION TOXICITY

Toluene Inhalation LC50 (4hr.)  
Rat 49 g/m<sup>3</sup>, Mouse 400 ppm

#### NOTES ON INHALATION TOXICITY

May cause irregular heartbeat. The vapor has anesthetic properties when inhaled at concentrations above the occupational exposure limit. It may cause respiratory irritation, headache, fatigue, dizziness and incoordination. Avoid breathing vapor or mists.

### 12. Ecological Information

**POTENTIAL EFFECT ON ENVIRONMENT:** Do not allow to enter drains, sewers or watercourses.

**MOBILITY:** Insoluble

**POTENTIAL TO BIOACCUMULATE:** Unknown

**AQUATIC TOXICITY:** None established

### 13. Disposal Considerations

**WASTE DISPOSAL METHOD:** Disposal should be in accordance with local, state or national legislation.

**EMPTY CONTAINER WARNINGS:** Empty containers may contain product residue, follow MSDS and label warnings even after they have been emptied.

### 14. Transport Information

Not a hazardous material for transportation.

#### US DOT REGULATIONS:

**NON-BULK** Proper Shipping Name: Not regulated

**BULK** Proper Shipping Name: Not regulated

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This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Additional transportation system information can be obtained through an authorized safety officer. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

### 15. Regulatory Information

**CALIFORNIA PROPOSITION 65:** This product contains the following chemicals that are known to the State of California to cause cancer, birth defects or other reproductive harm.

Component	CAS Number
Toluene	108-88-3

**TSCA INVENTORY STATUS:** PEM-665 is not listed on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory and therefore is for R&D purposes only by trained individuals.

SARA 313 TOXIC CHEMICALS:	Component	CAS Number
	Toluene	108-88-3

**R Phrases:** R 36, 38, 43  
R 36/37/38 Irritating to eyes, respiratory system and skin

**S Phrases:** S 26, 28 (soap and water), 36

### 16. Other Information

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgments of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user. While that data contained herein is factual, it should not be taken as warranty or representation for which the company assumes legal responsibility. It is offered solely for your consideration, investigation and verification. Any use of this data and information must be determined by the user to be in accordance with applicable federal, state and local laws and regulations.