Material Safety Data Sheet

Agilent Technologies Australia Pty Ltd
679 Springvale Road
Mulgrave
Victoria 3170, Australia
1800 802 402

PL-PEGA Resin

1. Identification of the material and supplier

<table>
<thead>
<tr>
<th>Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product name       : PL-PEGA Resin</td>
</tr>
<tr>
<td>Part No.           : PL1432-6389, PL1432-4679, PL1432-6679</td>
</tr>
<tr>
<td>ADG                : SOLIDS CONTAINING FLAMMABLE LIQUID, N.O.S. (Ethanol)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Supplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier/Manufacturer      : Agilent Technologies Australia Pty Ltd</td>
</tr>
<tr>
<td>679 Springvale Road</td>
</tr>
<tr>
<td>Mulgrave</td>
</tr>
<tr>
<td>Victoria 3170, Australia</td>
</tr>
<tr>
<td>1800 802 402</td>
</tr>
<tr>
<td>Emergency telephone number : CHEMTREC®: +(44)-870-8200418</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area of application : Industrial applications, Professional applications.</td>
</tr>
<tr>
<td>Material uses        : Analytical chemistry.</td>
</tr>
</tbody>
</table>

Resins.
PL1432-6389, PEGA 0.2mM/g 300-500um 1k
PL1432-1679, PEGA 0.4mM/g 150-300um 5g
PL1432-3679, PEGA 0.4mM/g 150-300um 25g
PL1432-4679, PEGA 0.4mM/g 150-300um 100g
PL1432-6679, PEGA 0.4mM/g 150-300um 1kg

2. Hazards identification

Classification : F; R11
Risk phrases : R11- Highly flammable.
Safety phrases : S36- Wear suitable protective clothing.
Statement of hazardous/dangerous nature : NON-HAZARDOUS SUBSTANCE. DANGEROUS GOODS.

3. Composition/information on ingredients

| Mixture | Yes. |

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>CAS number</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol</td>
<td>64-17-5</td>
<td>10 - &lt;30</td>
</tr>
<tr>
<td>Polyethylene glycol</td>
<td>25322-68-3</td>
<td>10 - &lt;30</td>
</tr>
</tbody>
</table>

Other ingredients, determined not to be hazardous according to Safe Work Australia criteria, and not dangerous according to the ADG Code, make up the product concentration to 100%.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4. First-aid measures

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
4. First-aid measures

Ingestion: Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact: Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Clean shoes thoroughly before reuse.

Eye contact: Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.

Protection of first-aiders: No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Advice to doctor: No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

5. Fire-fighting measures

Extinguishing media

Suitable: Use dry chemical, CO₂, water spray (fog) or foam.
Not suitable: Do not use water jet.

Special exposure hazards: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. Highly flammable liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard.

Hazardous thermal decomposition products: Decomposition products may include the following materials: carbon dioxide, carbon monoxide.

Special protective equipment for fire-fighters: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Special remarks on fire hazards: Emits acrid smoke and fumes when heated to decomposition.

Hazchem code: 1Z

6. Accidental release measures

Personal precautions: No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).

Environmental precautions: Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods for cleaning up: Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
PL-PEGA Resin

Handling and storage

Handling: Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapour or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by earthing and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.

Storage: Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

8. Exposure controls/personal protection

Occupational exposure limits

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>Exposure limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol</td>
<td>Safe Work Australia (Australia, 7/2012). TWA: 1880 mg/m³ 8 hours. TWA: 1000 ppm 8 hours.</td>
</tr>
<tr>
<td>Polyethylene glycol</td>
<td>TRGS900 AGW (Germany, 8/2010). PEAK: 8000 mg/m³ 15 minutes. Form: inhalable fraction TWA: 1000 mg/m³ 8 hours. Form: inhalable fraction</td>
</tr>
</tbody>
</table>

Recommended monitoring procedures: If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to appropriate monitoring standards. Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

Exposure controls:

Engineering measures: Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Hygiene measures: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eyes: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.
8. Exposure controls/personal protection

**Hands**
- Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

**Respiratory**
- Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

**Skin**
- Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

**Environmental exposure controls**
- Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9. Physical and chemical properties

- **Physical state**: Solid (containing flammable liquid)
- **Colour**: Off-white.
- **Odour**: Not available.
- **Boiling point**: Not available.
- **Melting point**: Decomposes.
- **Vapour pressure**: Not available.
- **Relative density**: $>1$  [Water = 1]
- **Flash point**: Not available.
- **Flammable limits**: Not available.
- **Vapour density**: Not available.
- **pH**: Not available.
- **Auto-ignition temperature**: Not available.
- **Solubility**: Insoluble in the following materials: cold water and hot water.

10. Stability and reactivity

- **Chemical stability**: The product is stable.
- **Possibility of hazardous reactions**: Under normal conditions of storage and use, hazardous reactions will not occur.
- **Conditions to avoid**: Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.
- **Materials to avoid**: oxidizing materials
- **Hazardous decomposition products**: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11. Toxicological information

- **Potential acute health effects**
  - **Inhalation**: No known significant effects or critical hazards.
  - **Ingestion**: No known significant effects or critical hazards.
  - **Skin contact**: May cause skin irritation.
  - **Eye contact**: May cause eye irritation.
  - **Acute toxicity**: Not available.

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11. Toxicological information

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Dose</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol</td>
<td>LC50 Inhalation Vapour</td>
<td>Rat</td>
<td>124700 mg/m³</td>
<td>4 hours</td>
</tr>
<tr>
<td></td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>7 g/kg</td>
<td>-</td>
</tr>
</tbody>
</table>

Conclusion/Summary: Not available.

Potential chronic health effects

Carcinogenicity

No known significant effects or critical hazards.

Mutagenicity

No known significant effects or critical hazards.

Teratogenicity

No known significant effects or critical hazards.

Skin

No specific data.

Ingestion

No specific data.

Inhalation

No specific data.

Conclusion/Summary: Not available.

Irritation/Corrosion

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Score</th>
<th>Exposure</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol</td>
<td>Eyes - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>24 hours</td>
<td>500 milligrams</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.066666667 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100 milligrams</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>400 milligrams</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>24 hours 20 milligrams</td>
</tr>
<tr>
<td>Polyethylene glycol</td>
<td>Eyes - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Skin - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td></td>
<td>-</td>
</tr>
</tbody>
</table>

Conclusion/Summary: Not available.

Sensitiser

Conclusion/Summary: Not available.

Chronic toxicity / Carcinogenicity / Mutagenicity / Teratogenicity / Reproductive toxicity

Not available.

Chronic effects: No known significant effects or critical hazards.

Carcinogenicity: No known significant effects or critical hazards.

Mutagenicity: No known significant effects or critical hazards.

Teratogenicity: No known significant effects or critical hazards.

Developmental effects: No known significant effects or critical hazards.

Fertility effects: No known significant effects or critical hazards.

Over-exposure signs/symptoms

Inhalation: No specific data.

Ingestion: No specific data.

Skin: No specific data.

Eyes: No specific data.

Target organs: Contains material which may cause damage to the following organs: liver, upper respiratory tract, skin, eyes, central nervous system (CNS).

12. Ecological information

Ecotoxicity: This material is harmful to aquatic life. May cause long-term adverse effects in the aquatic environment.

Aquatic ecotoxicity

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol</td>
<td>Acute EC50 17.921 mg/l</td>
<td>Marine water - Algae - Ulva pertusa</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Acute EC50 2000 µg/l</td>
<td>Fresh water - Daphnia - Daphnia magna</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 25500 µg/l</td>
<td>Marine water - Crustaceans - Artemia franciscana - Larvae</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 42000 µg/l</td>
<td>Fresh water - Fish - Oncorhynchus mykiss</td>
<td>4 days</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 4.995 mg/l</td>
<td>Marine water - Algae - Ulva pertusa</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 0.375 u/L</td>
<td>Fresh water - Fish - Gambusia holbrooki - Larvae</td>
<td>12 weeks</td>
</tr>
<tr>
<td>Polyethylene glycol</td>
<td>Acute LC50 &gt;1000000 µg/l</td>
<td>Fresh water - Fish - Salmo salar - Parr</td>
<td>96 hours</td>
</tr>
</tbody>
</table>
PL-PEGA Resin

12. Ecological information

Other ecological information

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Aquatic half-life</th>
<th>Photolysis</th>
<th>Biodegradability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol</td>
<td>-</td>
<td>-</td>
<td>Readily</td>
</tr>
</tbody>
</table>

Bioaccumulative potential

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>LogP&lt;sub&gt;ow&lt;/sub&gt;</th>
<th>BCF</th>
<th>Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol</td>
<td>-0.35</td>
<td>-</td>
<td>low</td>
</tr>
</tbody>
</table>

Other adverse effects: No known significant effects or critical hazards.

13. Disposal considerations

Methods of disposal:
The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

14. Transport information

<table>
<thead>
<tr>
<th>Regulation</th>
<th>UN number</th>
<th>Proper shipping name</th>
<th>Classes</th>
<th>PG*</th>
<th>Label</th>
<th>Additional information</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADG</td>
<td>UN3175</td>
<td>SOLIDS CONTAINING FLAMMABLE LIQUID, N.O. S. (Ethanol)</td>
<td>4.1</td>
<td>PG*</td>
<td>Label</td>
<td>Hazchem code 1Z</td>
</tr>
<tr>
<td>IMDG</td>
<td>UN3175</td>
<td>SOLIDS CONTAINING FLAMMABLE LIQUID, N.O. S. (Ethanol)</td>
<td>4.1</td>
<td>PG*</td>
<td>Label</td>
<td>Emergency schedules (EmS) F-A, S-I</td>
</tr>
<tr>
<td>IATA</td>
<td>UN3175</td>
<td>Solids containing flammable liquid, n.o.s. (Ethanol)</td>
<td>4.1</td>
<td>PG*</td>
<td>Label</td>
<td>Passenger and Cargo AircraftQuantity limitation: 15 kg Packaging instructions: 445 Cargo Aircraft Only Quantity limitation: 50 kg Packaging instructions: 448 Limited Quantities - Passenger Aircraft Quantity limitation: 5 kg Packaging instructions: Y441</td>
</tr>
</tbody>
</table>

PG* : Packing group
15. Regulatory information

**Standard Uniform Schedule of Medicine and Poisons**

Not regulated.

**Control of Scheduled Carcinogenic Substances**

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>No listed substance</td>
<td></td>
</tr>
</tbody>
</table>

**Australia inventory (AICS)** : All components are listed or exempted.

16. Other information

Date of issue : 23/08/2013

Date of previous issue : No previous validation.

 Indicates information that has changed from previously issued version.

Disclaimer: The information contained in this document is based on Agilent's state of knowledge at the time of preparation. No warranty as to its accurateness, completeness or suitability for a particular purpose is expressed or implied.