CaptivA® Protein A Affinity Resin, Revision 1
Material Safety Data Sheet

Section 1 – Product Identification
Supplier: Repligen Corporation
41 Seyon Street, Building 1, Suite 100
Waltham, MA 02453
Phone: (781) 250-0111; Fax: (781) 750-0115

Product Name: CaptivA® Protein A Affinity Resin
Synonyms: Immobilized Protein A, IPA-600
Catalog No(s): CA-PRI

Section 2 – Composition / Information on Ingredients

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>% (volume)</th>
<th>OSHA exposure limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol</td>
<td>64-17-5</td>
<td>17.5-18.5%</td>
<td>TWA: 1000 ppm 8 hour (s)</td>
</tr>
<tr>
<td>Cross linked agarose</td>
<td>9012-36-6</td>
<td>50%</td>
<td>Not established</td>
</tr>
</tbody>
</table>

Section 3 – Hazards Identification

Emergency Overview: COMBUSTIBLE LIQUID
CAUSES EYE, SKIN AND RESPIRATORY TRACT IRRITATION
CAN CAUSE TARGET ORGAN DAMAGE

OSHA: HAZARDOUS MATERIAL

HMIS: Health Hazard: 2 Temporary or minor injury may occur
Flammability: 2 Will not ignite at room temperature
Reactivity: 0 Stable

NFPA: Health Hazard: 2 Intense or continued but not chronic exposure could cause temporary incapacitation or possible residual injury
Fire: 2 Flash point between 38°C/100°F and 93°C/200°F
Instability: 0 Normally stable. Not reactive with water

EU Risk/Safety Phrases
R10 Flammable
R22 Harmful if swallowed
S16 Keep away from sources of ignition – No smoking
S20 When using do not eat or drink

Section 4 – First Aid Measures

If swallowed: Get medical attention.
In case of eye contact: Flush eyes with clean water for at least 15 minutes.
Remove contact lenses. Seek medical attention.
In case of skin contact: Flush skin with water. Remove contaminated clothing
If inhaled: Move to fresh air. Get medical attention
Section 5 – Fire Fighting Measures

COMBUSTIBLE LIQUID

WARNING: Containers may burst or explode if heated. Move containers away from heat or fire (if this can be done without risk).

Flash point (closed cup) 100°F (37.8°C)

Fire Extinguishing media

Dry chemical, CO2 or foam. Do not use water jet.

Section 6 – Steps to be Taken in the Event of a Spill or Discharge

Personal Protection:

Wear lab coat, gloves and eye protection. Avoid contact with spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Eliminate any sparks, flames or ignition sources from the spill area. Do not allow spilled material to enter soil, waterways or drains. Do not allow spilled material to accumulate in confined areas. Control spillage with non-flammable absorbent materials such as sand, earth or vermiculite. Contact licensed waste disposal contractor for proper disposal.

Disposal Procedure:

Do not dispose of in drains. Follow all applicable federal, state, and local environmental regulations.

Section 7 – Handling and Storage

General Precautions:

Use appropriate personal protective equipment, and observe good laboratory hygiene (see section 8).

Ventilation:

Keep and use only in a well ventilated area.

Respiratory Protection:

Not required if ventilation is adequate. Wear a suitable respirator if ventilation is inadequate.

Eye/skin Protection:

Standard safe laboratory practices recommended.

Storage:

Keep container tightly closed. Keep away from flames, sparks or other ignition sources.

Special precautions:

Store at 2-8°C/36-46°F for maximum shelf life (does not impact safety) Dissipate static electricity by grounding all containers prior to transfer.

Section 8 – Exposure Controls/Personal Protection

General

Keep away from heat, sparks and flame. Avoid exposure. Do not breathe vapor or mist. Avoid contact with eyes, skin and clothing. Use only with adequate ventilation. Wash thoroughly after handling.

Personal protective equipment

Standard laboratory practices recommended. Personal protective equipment should be selected to provide adequate protection based upon the procedures being performed. Wear laboratory coat, gloves and safety glasses when handling. Respiratory protection not required if ventilation is adequate.
Clean any exposed skin after handling, before leaving the working area, and before eating, smoking or using the lavatory. Clean any contaminated clothing before re-use.

Exposure limits (Ethanol)

ACGIH TLV (United States).
- IDLH: 3300 ppm
- NIOSH REL (United States, 12/2001).
  - TWA: 1900mg/m³ 10 hour(s); TWA: 1000 ppm 10 hour(s).
  - TWA: 1900 mg/m³ 8 hour(s); TWA: 1000 ppm 8 hour(s).

Section 9 – Physical and Chemical Properties

Appearance: Colorless Liquid with white suspended solids. Solids may settle during storage.
Flash Point: 100°F (37.8°C)
Odor: Alcohol
% Volatile: 19% (w/w)
VOC: 190 g/L

Section 10 – Stability and Reactivity

Stability: Stable under normal and use
Hazardous polymerization: Will not occur
Warnings: Keep away from oxidizing materials. Flammable. Keep away from open flames, sparks and heat.

Section 11 – Toxicological Information

<table>
<thead>
<tr>
<th>Ethanol:</th>
<th>Result</th>
<th>Species</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 Intra-arterial</td>
<td>Rat</td>
<td>11 mg/kg</td>
<td></td>
</tr>
<tr>
<td>LD50 Intraperitoneal</td>
<td>Rat</td>
<td>3600 ug/kg</td>
<td></td>
</tr>
<tr>
<td>LD50 Intravenous</td>
<td>Rat</td>
<td>1440 mg/kg</td>
<td></td>
</tr>
<tr>
<td>LD50 Oral</td>
<td>Rat</td>
<td>7060 mg/kg</td>
<td></td>
</tr>
<tr>
<td>TDLo Intracerebral</td>
<td>Rat</td>
<td>106 ug/kg</td>
<td></td>
</tr>
<tr>
<td>TDLo Intravenous</td>
<td>Rat</td>
<td>0.5 g/kg</td>
<td></td>
</tr>
<tr>
<td>TDLo Oral</td>
<td>Rat</td>
<td>6000 mg/kg</td>
<td></td>
</tr>
<tr>
<td>TDLo Oral</td>
<td>Rat</td>
<td>5000 mg/kg</td>
<td></td>
</tr>
<tr>
<td>TDLo Intraperitoneal</td>
<td>Rat</td>
<td>3000 mg/kg</td>
<td></td>
</tr>
<tr>
<td>TDLo Intraperitoneal</td>
<td>Rat</td>
<td>5000 mg/kg</td>
<td></td>
</tr>
</tbody>
</table>

Chronic effects: Contains material that can cause target organ damage
Carcinogenicity: None known
Mutagenicity: None known
Teratogenicity: None known
Developmental effects: None known
Fertility effects: None known
Target organs: Blood, kidneys, reproductive system, liver, respiratory tract, skin, CNS, eye.

Cross Linked Agarose: None known

### Section 12 – Ecological Information

Aquatic Ecotoxicity (Ethanol):

<table>
<thead>
<tr>
<th>Test</th>
<th>Result</th>
<th>Species</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intoxication</td>
<td>Acute EC50 &gt;100mg/L</td>
<td>Daphnia</td>
<td>48 hours</td>
</tr>
<tr>
<td>Intoxication</td>
<td>Acute EC50 9.3 mg/L</td>
<td>Daphnia</td>
<td>48 hours</td>
</tr>
<tr>
<td>Physiology</td>
<td>Acute EC50 2 mg/L</td>
<td>Daphnia</td>
<td>48 hours</td>
</tr>
<tr>
<td>Mortality</td>
<td>Acute LC50 13000mg/L</td>
<td>Fish</td>
<td>96 hours</td>
</tr>
<tr>
<td>Mortality</td>
<td>Acute LC50 &gt;100mg/L</td>
<td>Daphnia</td>
<td>96 hours</td>
</tr>
<tr>
<td>Mortality</td>
<td>Acute LC50 &gt;100mg/L</td>
<td>Fish</td>
<td>96 hours</td>
</tr>
</tbody>
</table>

Cross linked agarose: No known hazards

### Section 13 – Disposal Considerations

Dispose of in accordance with all applicable federal, state, and local environmental regulations. Do not allow spilled material to enter soil, waterways or drains.

See sections 6, 7 and 8

### Section 14 – Transport Information

IATA: Not classified: IATA Special Provision A58- Aqueous solutions containing 24% or less alcohol by volume not subject to these regulations.

DOT Road Transport: Non Hazardous. Not subject to the requirements of 49CFR per section 173.150(e).

### Section 15 – Regulatory Information

US Federal Regulations: United States inventory (TSCA 8b): All components are listed or exempted.

SARA 302/304/311/312 extremely hazardous substances: No products were found.

SARA 302/304 emergency planning and notification: No products were found.

SARA 302/304/311/312 hazardous chemicals: Ethanol

SARA 311/312 MSDS distribution -chemical inventory- hazard identification:

Ethanol: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard

Clean Water Act (CWA) 307: No products were found.

Clean Water Act (CWA) 311: No products were found.

Clean Air Act (CAA) 112 accidental release prevention: No products were found.
Clean Air Act (CAA) 112 regulated flammable substances: No products were found.
Clean Air Act (CAA) 112 regulated toxic substances: No products were found.
TSCA 8b: All components are listed or exempted

State Regulations: None of the components of the product are listed in any of the following state regulations:

EU Risk Phrases:
- R10 Flammable
- R22 Harmful if swallowed
- S16 Keep away from sources of ignition – No smoking
- S20 When using do not eat or drink

International:
- Australia inventory (AJCS): All components are listed or exempted.
- China inventory (JECC): All components are listed or exempted.
- Korea inventory (KECI): All components are listed or exempted.
- Philippines inventory (PJCCS): All components are listed or exempted.
- Japan inventory (ENCS): All components are listed or exempted.

Section 16 – Other Information

The material published in this Material Safety Data Sheet has been compiled from our experience and data presented in various publicly available publications. It is the user's responsibility to determine the suitability of this information for the adoption of necessary safety precautions.

Repligen makes no warranty or representation about the accuracy or completeness nor fitness for purpose of the information contained herein.