Introduction

The Thermo Scientific Pierce CDI Resins (Table 1) are activated with 1,1'-carbonyl diimidazole (CDI) to form reactive imidazole carbamates. This reactive group is formed on the resin in organic solvent and stored as a suspension in acetone to prevent hydrolysis. Reaction of the resin in an aqueous coupling buffer with primary amine-containing ligands causes loss of the imidazole groups and formation of carbamate linkages (Figure 1). The coupling process occurs at basic pH (8.5-10). While having slower reaction with proteins than reductive amination (Thermo Scientific AminoLink Coupling Gel, Product No. 20281) or azlactone (Thermo Scientific UltraLink Biosupport, Product No. 53110), CDI resins are particularly adept at immobilizing peptides, small organic molecules and certain proteins. The reaction also can be performed in organic solvent to permit coupling of water-insoluble ligands.

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>20259</td>
<td>Pierce CDI-Agarose, 10mL of CDI activated 6% crosslinked beaded agarose</td>
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<tr>
<td>20377</td>
<td>Pierce CDI-Trisacryl, 50mL of CDI activated Trisacryl GF-2000</td>
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Resin supports are supplied as 50% slurries in acetone.

Storage: Upon receipt store at 4°C. Product is shipped at ambient temperature.

Table 1. Characteristics of the CDI resins.

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<th>Agarose</th>
<th>Trisacryl GF-2000</th>
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<tbody>
<tr>
<td>Bead size:</td>
<td>45-165µm</td>
<td>40-80µm</td>
</tr>
<tr>
<td>Fractionating range:</td>
<td>10,000-400,000 MW</td>
<td>10,000-1,000,000 MW</td>
</tr>
<tr>
<td>Activation level:</td>
<td>&gt; 50µmol/mL gel</td>
<td>&gt; 50µmol/mL gel</td>
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Figure 1. Reaction scheme of primary amines with Pierce CDI Supports.
Procedure for Coupling Proteins to Pierce CDI Supports

1. Dissolve protein to be coupled in 10-100mM borate or carbonate buffer, pH 8.5-11. Do not use buffers that contain primary amines (e.g., do not use Tris buffer). Use 2-10mg of protein per mL of resin to be used, and dissolve the protein in a volume approximately equal to the volume of resin bed.

2. Equilibrate the bottle of resin to room temperature before opening. The reactive group is moisture sensitive; equilibrating the product to room temperature ensures that moisture will not condense on the product and decrease its activity level for later use.

3. Add the resin to a Büchner funnel containing Whatman No.1 filter paper or sintered glass to remove acetone by washing with ice cold water. Do not allow resin to dry completely.

4. Combine washed resin and the protein solution (2-10mg of protein/mL of resin).

5. Incubate reaction slurry at room temperature for 2 hours (at pH 11) to overnight (at pH 8.5-10).
   
   **Note:** When using reaction condition below pH 10, extending the reaction time to 24 hours or longer will improve coupling efficiency.

6. Drain or otherwise remove excess coupling buffer from the reaction slurry.
   
   **Note:** The efficiency of coupling may be determined by comparing the protein concentration before and after coupling using the Thermo Scientific Pierce BCA Protein Assay (Product No. 23225) or Coomassie Plus™ – (Bradford) Assay Kit (Product No. 23236).

7. Add 50mM Tris buffer (pH 9-11) to the resin and incubate for several hours to quench and block nonreacted CDI groups.

8. Drain the Tris quenching buffer and wash the resin with phosphate (PBS) or other buffer.

9. Pack the coupled resin into a column or other device for use in affinity purification.

General References


Product References


This product ("Product") is warranted to operate or perform substantially in conformance with published Product specifications in effect at the time of sale, as set forth in the Product documentation, specifications and/or accompanying package inserts ("Documentation") and to be free from defects in material and workmanship. Unless otherwise expressly authorized in writing, Products are supplied for research use only. No claim of suitability for use in applications regulated by FDA is made. The warranty provided herein is valid only when used by properly trained individuals. Unless otherwise stated in the Documentation, this warranty is limited to one year from date of shipment when the Product is subjected to normal, proper and intended usage. This warranty does not extend to anyone other than the original purchaser of the Product ("Buyer").

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There is no obligation to replace Products as the result of (i) accident, disaster or event of force majeure, (ii) misuse, fault or negligence of or by Buyer, (iii) use of the Products in a manner for which they were not designed, or (iv) improper storage and handling of the Products.

Current product instructions are available at www.thermoscientific.com/pierce. For a faxed copy, call 800-874-3723 or contact your local distributor.

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