Presents new robust methacrylic chromatographic resins for ionic chromatographic separation of enzymes, anionic proteins, peptides, and polynucleotides.

Chromalite® MDEA1 and Chromalite® MDEA2
Inside this Product Information guide you will find an overview of Chromalite® MDEA1 and Chromalite® MDEA2. For more detailed information on any product or to find a product for an application not mentioned, please go to www.purolite.com/products/lifesciences or contact the Purolite office closest to you, listed on the back cover.

INTRODUCTION

Founded in 1981, Purolite is a leading manufacturer of ion exchange, catalyst, adsorbent and specialty resins. With global headquarters in the United States, Purolite is the only company that focuses 100% of its resources on the development and production of resin technology.

Responding to the needs of our customers, Purolite has built the largest technical sales force in the industry, the widest variety of products and five strategically located Research and Development groups. Our ISO 9001 certified manufacturing facilities in the U.S.A, UK, Romania and China combined with more than 40 sales offices in 30 countries ensure worldwide coverage.

PREMIER PRODUCTS

The quality and consistency of our products is fundamental to our performance. Throughout all Purolite plants, production is carefully controlled to ensure that our products meet the most stringent criteria, regardless of where they are produced.

RELIABLE SERVICE

We are technical experts and problem solvers. Reliable and well trained, we understand the urgency required to keep businesses operating smoothly. Purolite employs the largest technical sales organization in the industry.

INNOVATIVE SOLUTIONS

Our continued investment in research & development means we are always perfecting and discovering innovative uses for ion exchange resins and adsorbents. We strive to make the impossible possible.
**Description**

Chromalite MDEA is a highly crosslinked macroporous polymethacrylic polymer, functionalised with tertiary amine (Methacrylic DiEthylAmine MDEA) to form a weakly basic anion exchanger. Chromalite MDEA is designed with a particle size range of 90 - 250 micron and is available in two different porosities.

Ionic interaction of the target compound with the functional group of Chromalite MDEA occurs at a pH that is higher than the isoelectric point of the target compound, see Figure 1. At a pH higher than the i\(p\), the target compound will be negatively charged and easily interact with positively charged amino groups the resin. Optimal working pH range is up to 9.

**Figure 1 – Example of ionic interaction of target compound with Chromalite MDEA**

![Weak base anion resin](image)

Chromalite MDEA has excellent mechanical strength with wide range pH stability (1 to 13) and resistance to high operating temperatures (up to 60°C/140°F).

**Applications**

Typical applications of Chromalite MDEA are:

- Purification of enzymes, anionic proteins, peptides, and polynucleotides
- Blood and plasma treatment
- Antibiotics manufactured by fermentation as lipopeptides (i.e. Daptomycin)
In purification of antibiotics, the chromatographic separation occurs sequentially using anion exchange chromatography (Chromalite MDEA), hydrophobic interaction chromatography (HIC, Chromalite PCG1200M) and anion exchange chromatography to purify a preparation containing lipopeptides (ref. EP 2940034 A1). Figure 2 shows the process.

**Figure 2** – Flow process showing industrial separation of antibiotics in pharmaceutical

![Flow process showing industrial separation of antibiotics in pharmaceutical](chart)
Commercially available alternatives

Sepabeads™ FP-DA13, Toyopearl® SuperQ-650C, Toyopearl® DEAE-650C

Product specifications

Chromalite MDEA1 and Chromalite MDEA2 are perfect spherical beads ideal for use in chromatographic columns, as shown in Figure 3. The two different proposed porosities allow to separate different compounds based on the specific size.

<table>
<thead>
<tr>
<th></th>
<th>Chromalite MDEA1</th>
<th>Chromalite MDEA2</th>
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</thead>
<tbody>
<tr>
<td><strong>Appearance</strong></td>
<td>White spherical beads</td>
<td>White spherical beads</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>Diethylamino methacrylate</td>
<td>Diethylamino methacrylate</td>
</tr>
<tr>
<td><strong>Particle size range (90% in the range, micron)</strong></td>
<td>90 - 250</td>
<td>90 - 250</td>
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<tr>
<td><strong>Functional degree (meq/ml)</strong></td>
<td>&gt; 0.15</td>
<td>&gt; 0.1</td>
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<tr>
<td><strong>Functional degree (meq/g)</strong></td>
<td>&gt; 0.8</td>
<td>&gt; 0.6</td>
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<tr>
<td><strong>Pore diameter (Å)</strong></td>
<td>&gt; 700</td>
<td>&gt; 1000</td>
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<tr>
<td><strong>Surface area (m²/g)</strong></td>
<td>&gt; 150</td>
<td>&gt; 200</td>
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Figure 3 – Electron microscopy pictures

Figure 3: Electron microscopy pictures showing the a) perfect spherical beads b) the porous surface of Chromalite MDEA1 and c) the porous surface of Chromalite MDEA2.
Mechanical stability

Unlike other resins (Figure 4), Chromalite MDEA1 and Chromalite MDEA2 are both characterized by excellent mechanical stability so they can be used in both batch mode and column applications.

Figure 4 – Mechanical stability of Chromalite MDEA1 and Chromalite MDEA2 compared to Sepabeads™ FP-DA13.

Packaging options

500 grams, 1Kg, 5Kg, 25Kg

- Shelf life: 5 years from date of manufacture.
- Product are packed in small tubs for quantities of 1Kg and less.
- For larger quantity product is packed in aluminium foil bags within blue plastic kegs.
- The maximum product quantity per keg is 25Kg.