



# AMBERCHROM® CG161

Chromatographic Grade Resin

## For Chromatographic Purification

### PRODUCT DATA SHEET

AMBERCHROM chromatographic media are macroporous, polymeric resins useful for adsorption and reversed phase liquid chromatography. They are designed for laboratory and process scale purifications of proteins, peptides, nucleic acids, antibiotics, and small molecular weight pharmaceuticals

AMBERCHROM CG161 chromatographic grade resin is an insoluble polystyrene divinylbenzene polymer manufactured for high value chromatographic applications. Its high surface area, unique pore size and pore volume distribution make it ideally suited for separation of peptides. AMBERCHROM CG161 has high capacity for many pharmaceutical compounds and has been commercially proven for many years. It is an excellent technical and economical alternative to RPC silica, and can be used in high resolution, low pressure chromatography.

AMBERCHROM CG161 is suitable for use in many pharmaceutical applications in the front end capture, purification, and desalting modes of operation depending on the particle size selected.

AMBERCHROM CG161 is available in three different particle size ranges (35, 75, and 120 microns), and is supplied as a slurry in 20 % ethanol.

AMBERCHROM CG161 is ideally suited for operation within the entire pH range, and can be easily cleaned in place (CIP) with most organic solvents and dilute acids and bases.

### REGULATORY STATUS

A Material Regulatory Support (MRS) package is developed for AMBERCHROM CG161 resin users requiring assistance in supporting use of the resin in regulated applications. It is developed under CDA with users of this product and tailored to the customer's process parameters.

This material is manufactured under strict controls, and plant audits by potential customers are welcomed.

### CLEAN IN PLACE

Unlike RPC silica, AMBERCHROM CG161, due to its polymeric nature and lack of bonded phase, can be cleaned in place (CIP) with most organic solvents and low concentrations of acids and bases. As the graph below demonstrates, there is no loss in capacity for Cephalosporin C after continuous exposure to 0.5 M NaOH for >180 days at ambient temperature and >100 days 60° C.

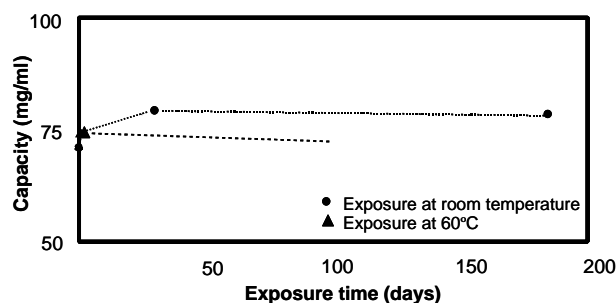


Figure 1: Ceph C Adsorption Batch Capacity

In addition to the excellent chemical resistance of AMBERCHROM CG161, it also exhibits low swelling in common solvents as shown below:

| Solvent      | Swelling |
|--------------|----------|
| Water        | 100      |
| Methanol     | 108      |
| Ethanol      | 106      |
| Isopropanol  | 112      |
| Acetonitrile | 112      |
| Acetone      | 114      |
| Toluene      | 104      |
| Dry          | 90       |

## APPLICATIONS

### Separation of Penicillin Derivatives

Amberchrom CG161 is utilized for the separation of penicillin derivatives 6APA; Penicillin G; Penicillin V. The effective separation was accomplished under the conditions shown below.

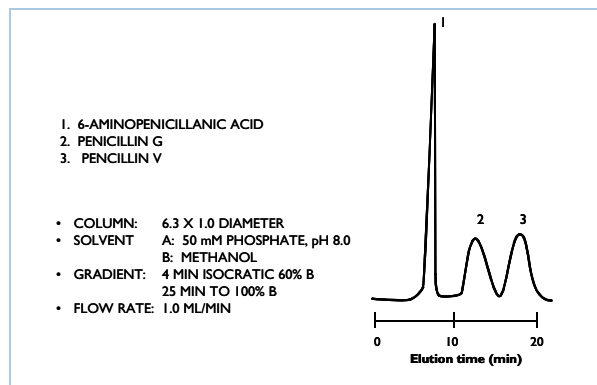


Figure 2: Penicillin Derivatives on Amberchrom CG161

### Kinetic Exclusion Chromatography

This application utilizes the size exclusion phenomenon whereby the target molecule is adsorbed and the large size impurities are excluded. During elution, the target molecule may be recovered.

Further purification can be performed if desired.

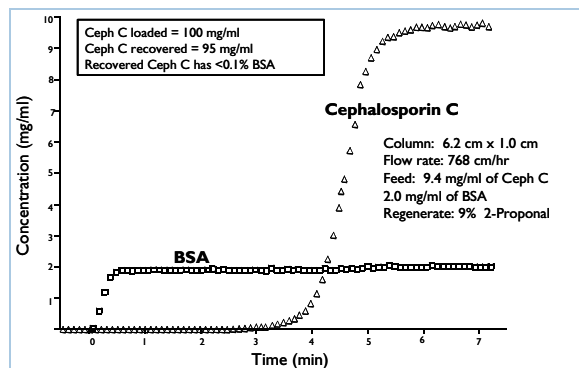


Figure 3: Kinetic Exclusion Chromatography using Amberchrom CG161

### Separation of Nucleosides

The graph below demonstrates an excellent separation of 5 nucleosides with Amberchrom CG161.

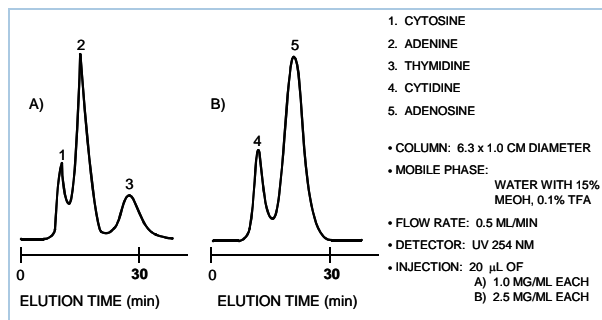


Figure 4: Nucleosides Separation on Amberchrom CG161

### IR SPECTRUM OF AMBERCHROM CG161

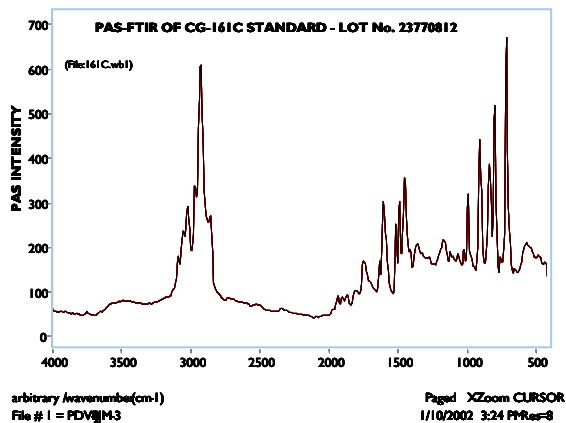


Figure 5: AMBERCHROM CG161 IR Spectrum

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## TYPICAL PHYSICAL PROPERTIES

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|                                |  |
|--------------------------------|--|
| Matrix _____                   | Polystyrene/Divinylbenzene macroreticular adsorbent                                      |
| Functional groups _____        | None   |
| Physical form _____            | Opaque white beads   |
| Shipping solvent _____         | 20% ethanol  |
| Surface area _____             | 900 m <sup>2</sup> /g  |
| Pore size <sup>[1]</sup> _____ | 150 Å  |
| Mean diameter _____            | S grade : 35 microns<br>M grade : 75 microns<br>C grade : 120 microns                    |
| Uniformity coefficient _____   | 1.7  |
| Chemical resistance _____      | Insoluble in dilute solutions of acids or bases<br>and common solvents : IPA, ACN, MeOH. |

<sup>[1]</sup> *Test methods are available on request.*

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## ORDERING INFORMATION

| Part Number | Description       | Particle Size | Packaging |
|-------------|-------------------|---------------|-----------|
| I023555     | AMBERCHROM CG161S | 35 µm         | 25 mL     |
| I023556     | AMBERCHROM CG161S | 35 µm         | 100 mL    |
| I023557     | AMBERCHROM CG161S | 35 µm         | 1000 mL   |
| I0097833    | AMBERCHROM CG161S | 35 µm         | 5 L       |
| I0097832    | AMBERCHROM CG161S | 35 µm         | 50 L      |
| I023558     | AMBERCHROM CG161M | 75 µm         | 25 mL     |
| I023559     | AMBERCHROM CG161M | 75 µm         | 100 mL    |
| I023560     | AMBERCHROM CG161M | 75 µm         | 1000 mL   |
| I0097837    | AMBERCHROM CG161M | 75 µm         | 5 L       |
| I0097836    | AMBERCHROM CG161M | 75 µm         | 50 L      |
| I0235561    | AMBERCHROM CG161C | 120 µm        | 25 mL     |
| I0235562    | AMBERCHROM CG161C | 120 µm        | 100 mL    |
| I0235563    | AMBERCHROM CG161C | 120 µm        | 1000 mL   |
| I0097840    | AMBERCHROM CG161C | 120 µm        | 5 L       |
| I0051174    | AMBERCHROM CG161C | 120 µm        | 50 L      |

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