

## AMBERCHROM™ CG300 Chromatographic Grade Resin For Chromatographic Purification

### Description

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 CG300 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 CG300 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 CG300 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 CG300 is available in three different particle size ranges (35, 75, and 120 microns), and is supplied as a slurry in 20% ethanol. AMBERCHROM CG300 is ideally suited for operation with 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 maintained for AMBERCHROM CG300 resin. It is available upon request under CDA for users of this product.

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

### Clean in Place

Unlike RPC silica, AMBERCHROM CG300, 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 Insulin after exposure to 0.5 M NaOH for 180 days at ambient temperature or 100 days exposure at 60°C.

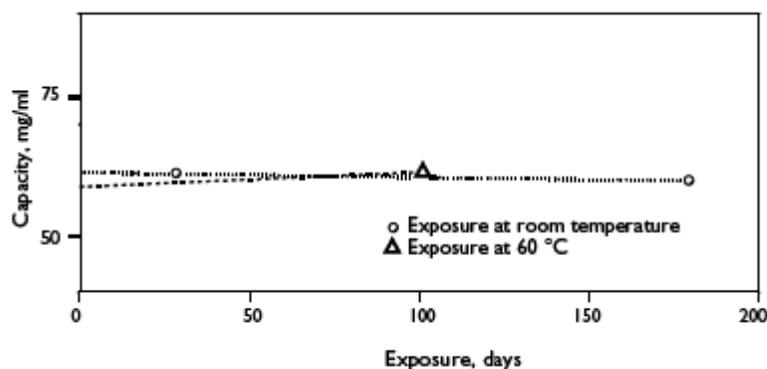


Figure 1: Insulin adsorption

In addition to the excellent chemical resistance of AMBERCHROM CG300, it also exhibits low swelling in common solvents as shown below:

Solvent	Swelling
Water	100
Methanol	104
Isopropanol	104
Acetone	104
Toluene	105
Dry	90

### Customer Application: Decapeptide Mixture

AMBERCHROM CG300S was used to separate a mixture of decapeptides that varied by only one amino acid. The adsorbent which was loaded to 15-20% of the total capacity demonstrated Langmuir behavior and gave an excellent separation of this mixture.

### Synthetic Peptide Purification

- S2: Ac-Arg-Gly-Gly-Gly-Gly-Leu-Gly-Leu-Gly-Lys-amide (10%)
- S3: Ac-Arg-Gly-Ala-Gly-Gly-Leu-Gly-Leu-Gly-Lys-amide (80%)
- S4: Ac-Arg-Gly-Val-Gly-Gly-Leu-Gly-Leu-Gly-Lys-amide (10%)

\*Ac = N-acetyl, amide = C-amide

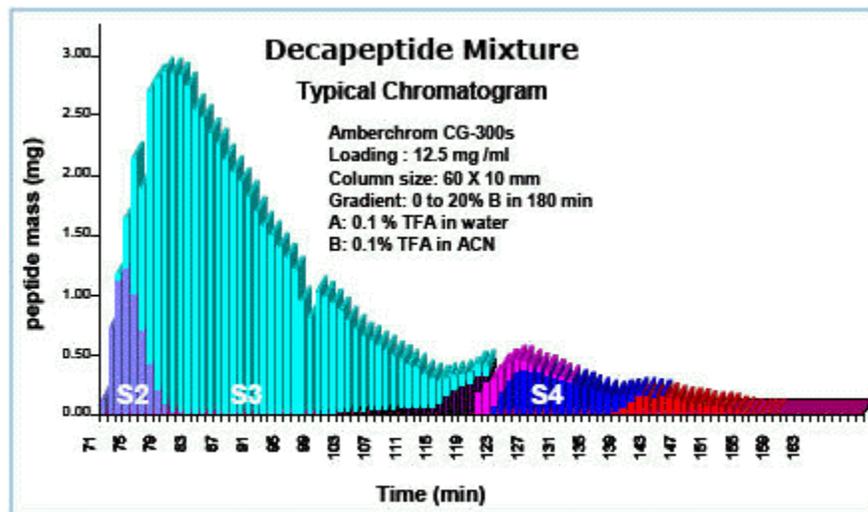


Figure 2: Preparative Purification

### IR Spectrum of Amberchrom CG300

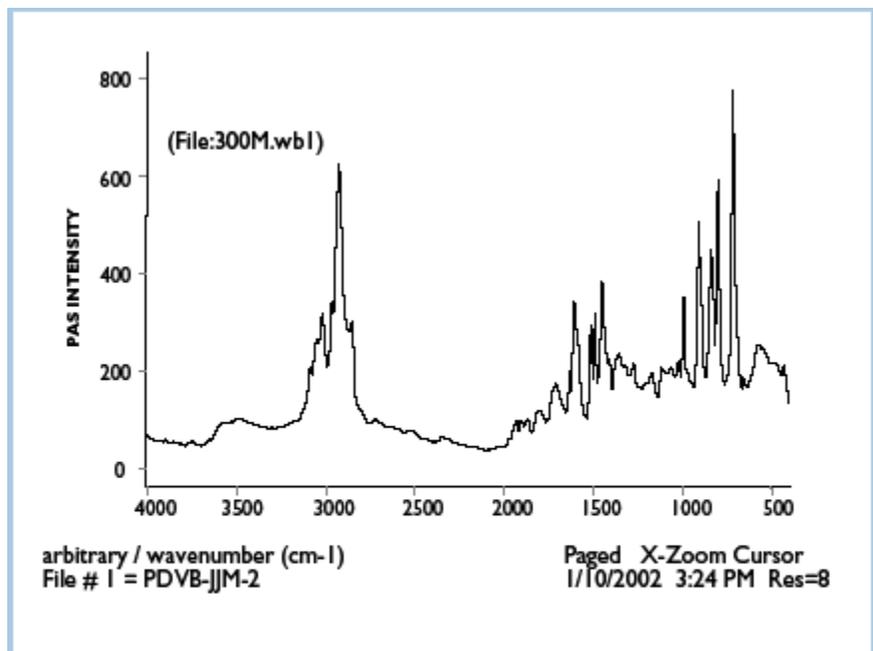


Figure 3: AMBERCHROM CG300 IR Spectrum

### Importance of Selectivity

This example shows the separation of insulin from a well known impurity, desamido insulin. The graph compares RPC silica to AMBERCHROM CG300.

These two adsorbents have the same number of theoretical plates, so the difference in behavior is related to polymer selectivity.

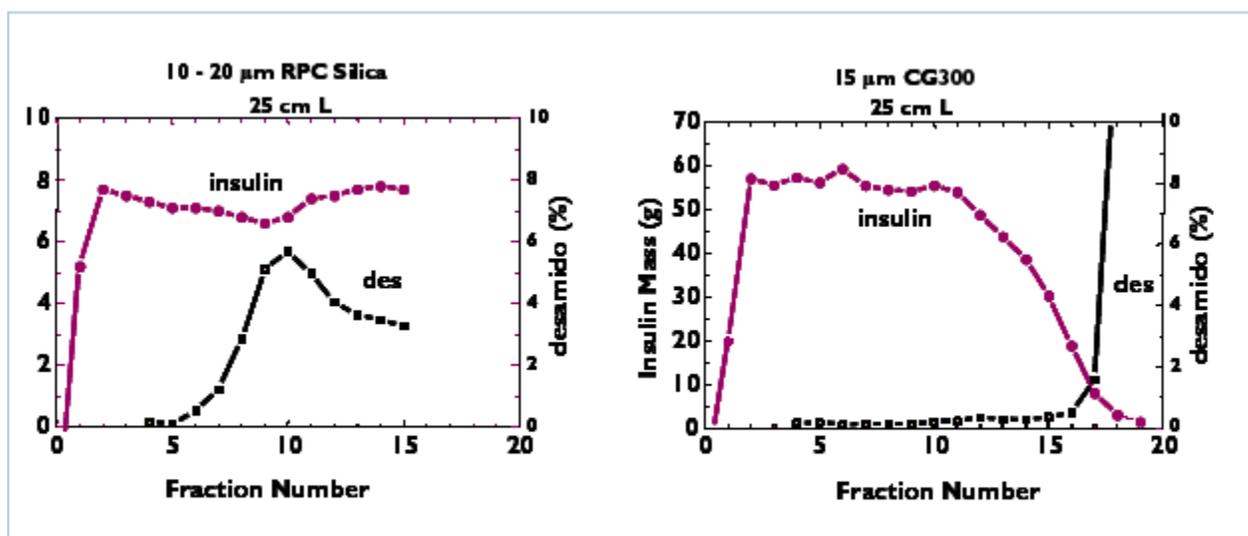


Figure 4: Bovin Insulin Purification

### Typical Physical Properties

These properties are typical but do not constitute specifications.

Matrix	Polystyrene/divinylbenzene adsorbent
Functional Groups	None
Physical form	Opaque white beads
Shipping solvent	20% ethanol
Surface area	700 m <sup>2</sup> /g
Pore size <sup>[1]</sup>	300 Å
Mean Diameter	S grade: 35 microns M grade: 75 microns C grade: 120 microns
Uniformity coefficient	1.7
Chemical resistance	Insoluble in dilute solutions of acids or bases and common solvents: IPA, ACN, MeOH.

[1] *Test methods are available on request.*

### Selected References

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- Process Development and Scale up Using Polymeric RPC Resins; Kinzey, M.; Fisher, J.; O'Donnell, J.K.; Rosen, R.E.; Maikner, J.J.; Kraus, M.M.; Iuliano, S.J.; Prep 98; May 31-June 3, 1998, Washington, DC.
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- Process Economics Aspects of RPC Purification; Kinzey, M.; Kraus, M.; Fisher, J.; Maikner, J.; Rosen, R.; 3rd HIC/RPC Bioseparations Conference; February 5-9, 2001; Athens, Greece.

### Ordering Information

Part Number	Description	Particle Size	Packaging
I0235564	AMBERCHROM CG300S	35 µm	25 mL
I0235565	AMBERCHROM CG300S	35 µm	100 mL
I0235566	AMBERCHROM CG300S	35 µm	1000 mL
I0097842	AMBERCHROM CG300S	35 µm	5 L
I0097841	AMBERCHROM CG300S	35 µm	50 L
I0235567	AMBERCHROM CG300M	75 µm	25 mL
I0235568	AMBERCHROM CG300M	75 µm	100 mL
I0235569	AMBERCHROM CG300M	75 µm	1000 mL
I0097845	AMBERCHROM CG300M	75 µm	5 L
I0048519	AMBERCHROM CG300M	75 µm	50 L
I0235570	AMBERCHROM CG300C	120 µm	25 mL
I0235571	AMBERCHROM CG300C	120 µm	100 mL
I0235572	AMBERCHROM CG300C	120 µm	1000 mL
I0097847	AMBERCHROM CG300C	120 µm	5 L
I0097846	AMBERCHROM CG300C	120 µm	50 L

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Ion exchange resins and polymeric adsorbents, as produced, contain by-products resulting from the manufacturing process. The user must determine the extent to which organic by-products must be removed for any particular use and establish techniques to assure that the appropriate level of purity is achieved for that use. The user must ensure compliance with all prudent safety standards and regulatory requirements governing the application. Except where specifically otherwise stated, Rohm and Haas Company does not recommend its ion exchange resins or polymeric adsorbents, as supplied, as being suitable or appropriately pure for any particular use. Consult your Rohm and Haas technical representative for further information. Acidic and basic regenerant solutions are corrosive and should be handled in a manner that will prevent eye and skin contact. Nitric acid and other strong oxidising agents can cause explosive type reactions when mixed with ion exchange resins. Proper design of process equipment to prevent rapid buildup of pressure is necessary if use of an oxidising agent such as nitric acid is contemplated. Before using strong oxidising agents in contact with ion exchange resins, consult sources knowledgeable in the handling of these materials.

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