



AMBERCHROM® CG300

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 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.

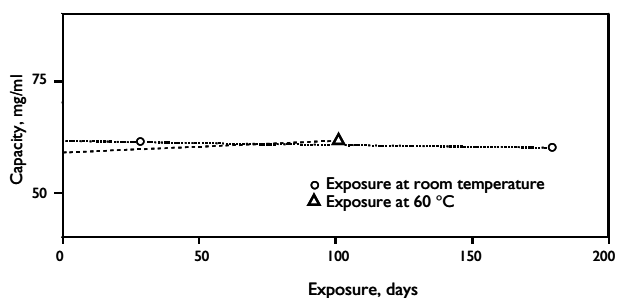


Figure 1: Insulin adsorption

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-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

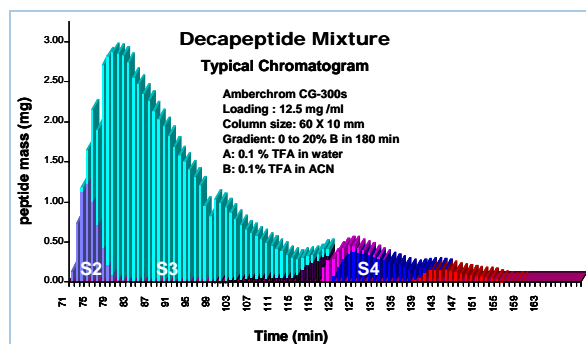


Figure 2: Preparative Purification

IR SPECTRUM OF AMBERCHROM CG300

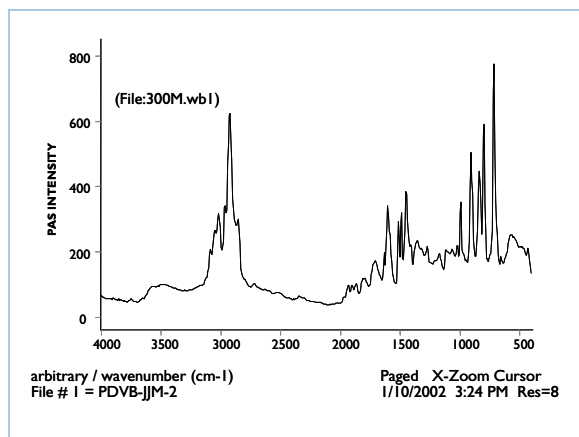


Figure 3: AMBERCHROM CG300 IR Spectrum

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.

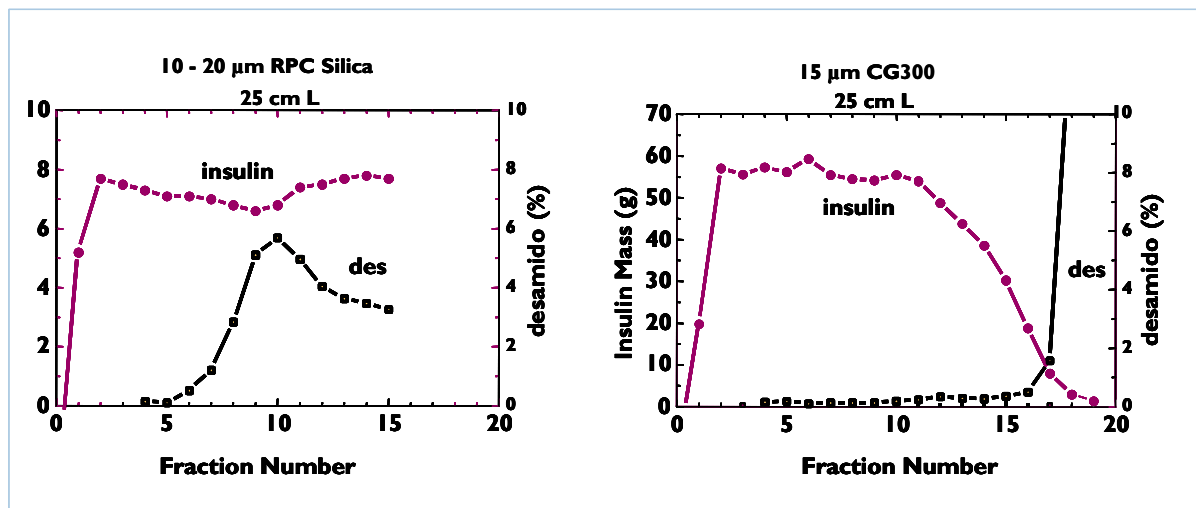


Figure 4: Bovin Insulin Purification

TYPICAL PHYSICAL PROPERTIES

Matrix _____	Polystyrene/Divinylbenzene adsorbent
Functional groups _____	None
Physical form _____	Opaque white beads
Shipping solvent _____	20% ethanol
Surface area _____	700 m ² /g
Pore size ^[1] _____	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

- Characterization of a family of polymeric resins with average pore diameters of 150, 300, and 1000 for the preparative reverse phase purification of polypeptides ; Cartier, Peter G.; Deissler, Karl C.; Maikner, John J.; Kraus, Michael ; Spec. Publ. - R. Soc. Chem. (1994), 158 (Separations for Biotechnology 3), 100-5 CODEN: SROCDO; ISSN: 0260-6291.
- Validation of a theoretical model for adsorption using cephalosporin C and polymeric reversed-phase resins ; Firouztale', E.; Maikner, J. J.; Deissler, K. C.; Cartier, P. G. ; J. Chromatogr. (1994), 658(2), 361-70 CODEN: JOCRAM; ISSN: 0021-9673.
- The utility of polymeric reversed phase packings for the purification of peptides, proteins and antibiotics ; Cartier, P. G.; Deissler, K. C.; Maikner, J. J. ; Sep. Biotechnol. 2, [Pap. Int. Symp.], 2nd (1990), 275-84. Editor(s): Pyle, D. L. Publisher: Elsevier, London, UK. CODEN: 56YXAO.
- Use of resins for trichothecene production in liquid cultures ; Jarvis, Bruce B.; Armstrong, Catherine A.; Zeng, Ming ; J. Antibiot. (1991), 44(3), C1 CODEN: JANTAJ; ISSN: 0021-8820.
- Analytical- and preparative-scale chromatographic separation of phenylalanine from aspartame using a new polymer sorbent ; Ladisch, Michael R.; Hendrickson, Richard L.; Firouztale, Edward ; J. Chromatogr. (1991), 540(1-2), 85-101 CODEN: JOCRAM; ISSN: 0021-9673.
- Use of resins for trichothecene production in liquid cultures ; Jarvis, Bruce B.; Armstrong, Catherine A.; Zeng, Ming ; J. Antibiot. (1990), 43(11), 1502-4 CODEN: JANTAJ; ISSN: 0021-8820.
- Automated purification and quantification of oligonucleotides ; Ivanetich, K. M.; Reid, R. C.; Ellison, R.; Perry, K.; Taylor, R.; Reschenberg, M.; Mainieri, A.; Zhu, D.; Argo, J.; Cass, D.; Strickland, C. ; BioTechniques (1999), 27(4), 810,812,814-818,820,822-823 CODEN: BTNQDO; ISSN: 0736-6205.
- Purification of LL-AO341 antibiotics derived from fermentation broth by large scale preparative reversed phase chromatography on Amberchrom CG161 M.; Williams, David R.; Lee, M. D.; Pinho, F.; Borders, D. B. ; Abstracts of Papers American Chemical Society, (1994) Vol. 207, No. 1-2, pp. BTEC 89. ; Meeting Info.: 207th National Meeting of the American Chemical Society San Diego, California, USA March 13-17, 1994 ;ISSN: 0065-7727.
- Purification of fermentation products with polymeric media ; Cartier, P. G. ; Maikner, J. (1); Deissler, K. C.; Firouztale, E. Abstracts of Papers American Chemical Society, (1993) Vol. 205, No. 1-2,pp. BIOT 18. ; Meeting Info.: 205th ACS (American Chemical Society) National Meeting Denver, Colorado, USA March 28-April 2, 1993 ISSN: 0065-7727.
- Process Economics Aspects of RPC Purification; Kinzey, M.; Kraus, M.; Fisher, J.; Maikner, J.; Rosen, R.; Recovery of Biological Products IX; May 23-28, 1999; Whistler, CA.
- 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.
- Strategies for Optimizing Peptide Purifications Using Amberchrom CG300S; Kinzey, M.; Deissler, K.; Fisher, J.; Maikner, J.; Kraus, M.; Rosen, R.; European Forum on Advances in Industrial Downstream Processing; May 13-15, 1998, Stuttgart, Germany.
- 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

Rohm and Haas/Ion Exchange Resins - Philadelphia, PA - Tel. (800) RH AMBER - Fax: (215) 409-4534
 Rohm and Haas/Ion Exchange Resins - 75579 Paris Cedex 12 - Tel. (33) 1 40 02 50 00 - Fax : 1 43 45 28 19

WEB SITE: <http://www.amberchrom.com>



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