

TSK-GEL® Affinity Columns

High efficiency resin-based TSK-GEL affinity chromatography columns will separate or purify many enzymes and other proteins. Choose the column you need from the six described here.

Separations developed on the Chelate-5PW, Heparin-5PW or Tresyl-5PW columns can be readily scaled up for preparative separations by using the corresponding Toyopearl® packings (refer to our catalog for these packings).

Characteristics of TSK-GEL Affinity Packings

Particle	hydrophilic resin, 10µm
Pore Size (Å)	1000
pH Range	2 - 12

TSKgel ABA-5PW

Typical Uses: purify trypsin, bovine thrombin, urokinase enterokinase, plasminogen activator

Immobilized Ligand: p-aminobenzamidine

Adsorption Capacity: 3-4mg trypsin/mL gel

TSKgel Boronate-5PW

Typical Uses: separate glycoproteins, nucleases, nucleotides, catecholamines, carbohydrates, transfer RNAs

Immobilized Ligand: m-aminophenylboronic acid

Adsorption Capacity: 40µmol sorbitol/mL gel

TSKgel Chelate-5PW

Typical Uses: purify serum proteins, plasminogen activator, collagenase, lactoferrin, granule protein, interferon

Immobilized Ligand: ~20µmol iminodiacetic acid/mL gel

Chelating Capacity: ~20µmol Cu⁺⁺ or Zn⁺⁺/mL gel

TSKgel Heparin-5PW

Typical Uses: purify coagulation factors, lipoprotein and lipoprotein lipases, DNA and RNA polymerases, various other enzymes

Immobilized Ligand: 4-6mg heparin/mL gel

Adsorption Capacity: 2-3mg human antithrombin III/mL gel

TSKgel Tresyl-5PW

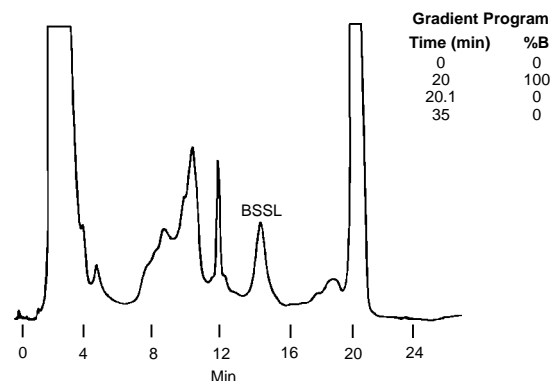
Typical Uses: activated support – immobilizes ligands by reacting with amino or thiol groups

Immobilized Ligand: 20µmol -CH₂OSO₂CH₂CF₃/mL gel

Toyopearl and TSK-GEL are registered trademarks of Tosoh Corp.

Figure A. Bile Salt-Stimulated Lipase Purified by Affinity Chromatography

Column: **TSKgel Heparin 5PW**
7.5cm x 7.5mm, 10µm particles
Cat. No.: **8-13064**
Mobile Phase: (A) 20mM Tris, pH 7.5,
(B) 20mM Tris, 1.0M NaCl, pH 7.5
Flow Rate: 1mL/min
Det.: UV, 280nm
Inj.: 100µL human milk whey



713-0921

Technical Literature

Reid, T. and A. Stancavage, *Rapid Analytical and Preparative Scale Immobilized Metal Affinity Chromatography to Purify alpha-Lactalbumin from Milk Whey*. *Biochromatography* 4 (5): 262 (1989).

Reid, T. and D. Gisch, *Determination of Glycosylated and Nonglycosylated Hemoglobins, Using a Fast Affinity Boronate HPLC Column*. *J. HRC & CC* 12: 249 (1989).

Gisch, D.J., T.S. Reid, J.S. Swan and J. Cheng, *Rapid Analytical and Preparative Affinity Chromatography, Using Resin-Bound Heparin to Resolve Bile Salt Stimulated Lipase from Human Milk Whey*. *J. HRC & CC* 12: 258 (1989).

Reid, T.S. and D.J. Gisch, *Applications for Group Specific Ligands in Fast, High Performance Affinity Chromatography*. *Biochromatography* 3 (5): 201 (1988).

Gisch, D. and T. Reid, *Rapid Analytical and Preparative Affinity Chromatography Using Resin-Bound Cibacron Blue F3G-A*. *J. HRC & CC* 11: 666 (1988).

Nakamura, K., K. Toyoda and Y. Kato, *High-performance Affinity Chromatography of Proteins on TSKgel Heparin-5PW*. *J. Chromatogr.* 445: 234 (1988).

Kato, Y., K. Nakamura and T. Hashimoto, *High-performance Metal Chelate Affinity Chromatography of Proteins*. *J. Chromatogr.* 354: 511 (1986).

Nakamura, K., T. Hashimoto, Y. Kato, K. Shimura and K-I. Kasai, *Tresyl-activated Support for High-performance Affinity Chromatography*. *J. Chromatogr.* 510: 101 (1990).

Nakamura, K., T. Hashimoto, Y. Kato, K. Shimura and K-I. Kasai, *Effect of Type and Concentration of Coupling Buffer on Coupling Yield in the Coupling of Proteins to a Tresyl-activated Support for Affinity Chromatography*. *J. Chromatogr.* 513: 367 (1990).

Kakita, H., K. Nakamura, Y. Kato, Y. Oda, K. Shimura and K-I. Kasai, *High-performance Affinity Chromatography of a Chick Lectin on an Adsorbent Base on Hydrophilic Polymer Gel*. *J. Chromatogr.* 543: 315 (1991).

To Order, Call: 800-247-6628 or 814-359-3441

SUPELCO

T494080A

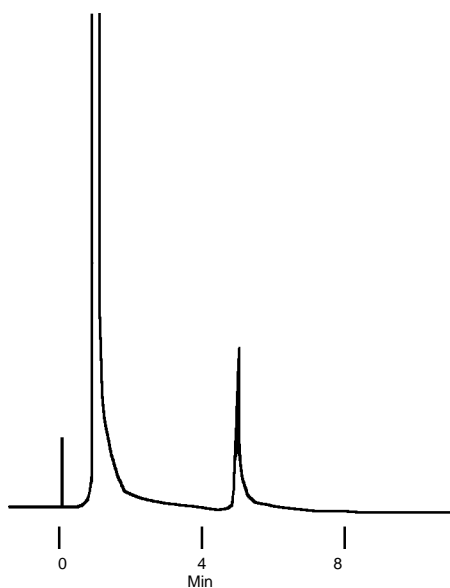


©1996 Sigma-Aldrich Co.

TSK-GEL Affinity Columns

Figure B. Peroxidase on Concanavalin A-Coupled TSKgel Tresyl-5PW Column

Column: **Concanavalin A-coupled Tresyl-5PW, 4cm x 6mm ID, 10µm particles**
 Cat. No.: **8-14455**
 Mobile Phase: 50mM acetate (pH 5.0)/ 0.5M NaCl, 1mM CaCl₂, MnCl₂ and MgCl₂, step to same buffer plus 25mM α-methyl-D-glucoside at 4 min
 Flow Rate: 1mL/min
 Det.: UV, 280nm
 Inj.: 0.5mg crude peroxidase
 Ligand Coupling: 40mg concanavalin A in 10mL 0.1M sodium carbonate (pH 8.0)/0.5M NaCl
 Prepacked column derivatized by recycling ligand solution at 0.2mL/min overnight at 25°C. Column washed with 0.1M Tris-HCl (pH 8.0) for 1 hr at 25°C



713-1233

Ordering Information: TSK-GEL Affinity Columns

Column	Packing Particle Size (µm)	Column Dimensions		Cat. No.
		Length (cm)	Diameter (mm)	
TSKgel ABA-5PW	10	7.5	7.5	8-13067
TSKgel ABA-5PW guard column kit	20	1	6	8-13127
TSKgel ABA-5PW packing (5mL)	20	—	—	8-13128
TSKgel Boronate-5PW	10	7.5	7.5	8-13066
TSKgel Boronate-5PW packing (5mL)	20	—	—	8-13126
TSKgel Guardgel Holder	—	1	6	8-03432
TSKgel Chelate-5PW	10	7.5	7.5	8-08645
TSKgel Chelate-5PW guard column kit	20	1	6	8-08647
TSKgel Chelate-5PW packing (5mL)	20	—	—	8-08648
TSKgel Heparin-5PW	10	7.5	7.5	8-13064
TSKgel Heparin-5PW guard column kit	20	1	6	8-13121
TSKgel Heparin-5PW packing (5mL)	20	—	—	8-13122
TSKgel Tresyl-5PW	10	4	6	8-14455
TSKgel Tresyl-5PW	10	7.5	7.5	8-14456

Guard column kits include 1cm x 6.0mm column, column holder, 5mL packing, 2 frits, 2 nuts and ferrules for 1/16" tubing, 5cm of 1/16" tubing.

For more information, or current prices, contact your nearest Supelco subsidiary listed below. If your country is not listed, see the Supelco catalog for a complete list of all Supelco representatives, or contact Supelco, Bellefonte, PA 16823-0048 USA.

ARGENTINA · Sigma-Aldrich de Argentina, S.A. · Buenos Aires 1119 **AUSTRALIA** · Sigma-Aldrich Pty. Ltd. · Castle Hill NSW 2154 **AUSTRIA** · Sigma-Aldrich Handels GmbH · A-1110 Wien
BELGIUM · Sigma-Aldrich N.V./S.A. · B-2880 Bornem **BRAZIL** · Sigma-Aldrich Quimica Brasil Ltda. · 01239-010 São Paulo, SP **CANADA** · Sigma-Aldrich Canada, Ltd. · 2149 Winston Park Drive, Ontario L6H 6J8
CZECH REPUBLIC · Sigma-Aldrich s.r.o. · 186 00 Praha 8 **FINLAND** · Sigma-Aldrich Finland/YA-Kemia Oy · FIN-00700 Helsinki **FRANCE** · Sigma-Aldrich Chimie · 38297 Saint-Quentin-Fallavier Cedex
GERMANY · Sigma-Aldrich Chemie GmbH · D-82041 Deisenhofen **GREECE** · Sigma-Aldrich (o.m.) Ltd. · Ilioupoli 16346, Athens **HUNGARY** · Sigma-Aldrich Kft. · H-1067 Budapest
INDIA · Sigma-Aldrich Co. · Hyderabad 500 033 **IRELAND** · Sigma-Aldrich Ireland Ltd. · Dublin 24 **ISRAEL** · Sigma Israel Chemicals Ltd. · Rehovot 76100 **ITALY** · Sigma-Aldrich s.r.l. · 20151 Milano
JAPAN · Sigma-Aldrich Japan K.K. · Chuo-ku, Tokyo 103 **MEXICO** · Sigma-Aldrich Quimica S.A. de C.V. · 14210 México D.F. **NETHERLANDS** · Sigma-Aldrich Chemie BV · 3331 LL Zwijndrecht
NORWAY · Sigma-Aldrich Norway · Torshov · N-0401 Oslo **POLAND** · Sigma-Aldrich Sp. z o.o. · 61-663 Poznań **SINGAPORE** · Sigma-Aldrich Pte. Ltd.
SOUTH AFRICA · Sigma-Aldrich (pty) Ltd. · Midrand 1685 **SPAIN** · Sigma-Aldrich Quimica, S.A. · 28100 Alcobendas, Madrid **SWEDEN** · Sigma-Aldrich Sweden AB · 135 70 Stockholm
SWITZERLAND · Supelco · CH-9471 Buchs **UNITED KINGDOM** · Sigma-Aldrich Company Ltd. · Poole, Dorset BH12 4QH
UNITED STATES · Supelco · Supelco Park · Bellefonte, PA 16823-0048 · Phone 800-247-6628 or 814-359-3441 · Fax 800-447-3044 or 814-359-3044 · email:supelco@sial.com

G

Supelco is a member of the Sigma-Aldrich family. Supelco products are sold through Sigma-Aldrich, Inc. Sigma-Aldrich warrants that its products conform to the information contained in this and other Sigma-Aldrich publications. Purchaser must determine the suitability of the product for a particular use. Additional terms and conditions may apply. Please see the reverse side of the invoice or packing slip.