



Redefining Resolution: The PSDVB Platform for Advanced Affinity Chromatography

**Affinity Chromatography
The PSDVB Platform**

Yinan Zhang, Minxin Wang, Linting Li, Xuyang Zhang and Ke yang

A Versatile PSDVB Platform for Analytical Affinity Chromatography

In high-performance liquid chromatography (HPLC) and industrial bioprocessing, the selection of resin matrix has a substantial impact on process efficiency, method robustness, and analytical performance. Traditional agarose-based resins are widely used in affinity chromatography, but their mechanical and chemical limitations can restrict performance under high-pressure operation and chemically demanding conditions.

In analytical chromatography, the reliability of experimental results depends strongly on the stability and integrity of the stationary phase. Sepax PS/DVB (polystyrene-divinylbenzene) platform technology was developed to overcome the limitations of soft-gel matrices. Based on a rigid, spherical, monosized and highly cross-linked polymer structure, the PSDVB platform offers improved mechanical strength and chemical durability, supporting high-capacity capture together with high-resolution separations under elevated-pressure conditions. These features make it a suitable platform for precise affinity-based analysis and other demanding analytical workflows.

Key Advantages for Analytical Applications

- **Superior Peak Shape and Resolution:** The high mechanical strength of the PSDVB matrix minimizes bed compression under elevated pressure, maintaining consistent flow paths and reducing peak tailing.
- **Expanded Dynamic Range:** Owing to its higher loading capacity, the PSDVB platform supports a broader linear range for quantification.
- **High-Speed Analysis:** The rigid polymer structure supports higher flow rates, enabling faster analyses and rapid binding kinetics without compromising recovery or risking excessive backpressure.
- **Chemical Robustness for Method Development:** Broad pH tolerance and compatibility with organic solvents allow the use of diverse mobile phases and stronger elution conditions, providing greater flexibility for optimizing challenging separations.
- **Low Baseline Noise and Improved Durability:** Minimal ligand shedding and high chemical stability contribute to a cleaner baseline, which is critical for detecting low-abundance analytes and supporting long-term column performance.

Featured Affinity Portfolio

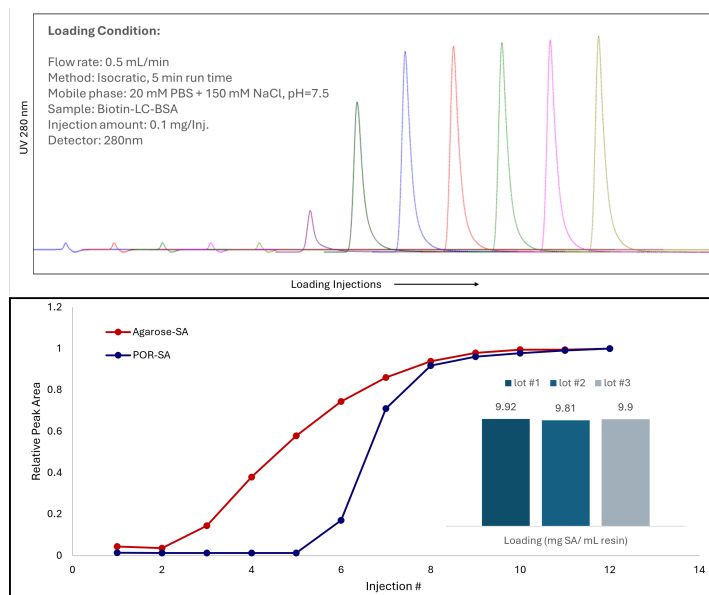
Phase	Description	Key Application
Proteomix POR-SA HTP	PS/DVB-based streptavidin affinity column engineered for high-throughput applications	selective biotin capture and a scalable platform for ligand customization
ProAqa Excel	Protein A affinity column engineered for high-efficiency antibody capture	Monoclonal antibody (mAb) titer determination
BioService HSA	Human serum albumin (HSA) affinity column for ligand-binding evaluation	Drug–protein interaction and binding studies
Proteomix POR50-dT20	Oligo(dT) affinity column for selective capture of poly(A)-containing nucleic acids	Analysis and purification of poly(A)-tailed oligonucleotides and mRNA

Proteomix POR-SA HTP

The Proteomix POR-SA Affinity HTP Column is designed for rapid and selective capture of biotinylated proteins, oligonucleotides, and other biomolecules. Built on a rigid PS/DVB platform, the column provides strong pressure-flow stability and sharp peak profiles under analytical operating conditions. Functionalized with streptavidin, it serves as a versatile affinity interface for biotin-mediated capture and for customized ligand immobilization based on the streptavidin-biotin interaction.

The high-throughput performance of the column is supported by its macroporous architecture, which promotes rapid binding kinetics and a loading capacity of 3-4 mg Biotin-LC-BSA/mL resin, approximately twice that of conventional agarose-based media. This design supports a broader linear range for quantitative analysis while minimizing sample loss through efficient mass transfer. In addition, strong batch-to-batch reproducibility reduces the need for method recalibration across column lots, supporting consistent performance in biotinylated capture and customized ligand immobilization workflows. The chemical robustness of the PS/DVB matrix also provides extended operational lifetime and compatibility with a broad pH range and organic solvents, enabling aggressive cleaning protocols and flexible elution strategies. Together, these characteristics make the Proteomix POR-SA Affinity HTP Column a robust analytical tool for biomolecular capture, interaction studies, and rapid affinity method development.

Figure 1. Performance of the POR-SA Affinity HTP Column. (Top) Chromatographic overlay of 12 consecutive Biotin-LC-BSA injections on a 2.1 x 50 mm POR-SA column. (Bottom) Performance comparison vs. a competitor's Agarose-SA column of identical dimensions. Inset: Batch-to-batch reproducibility across multiple POR-SA lots.)



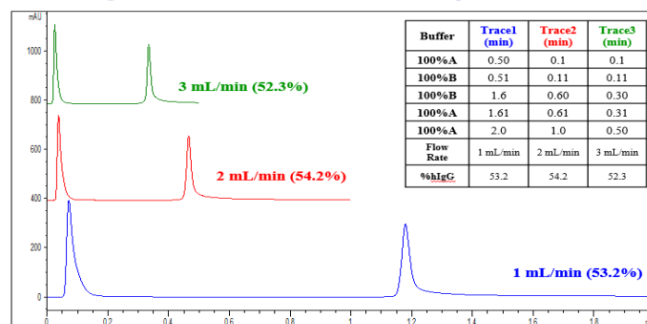
ProAqa Excel

The ProAqa Excel column enables rapid and accurate quantification of monoclonal antibody (mAb) titers for cell line screening, upstream bioprocess optimization, and quality control. Built on monodisized, highly cross-linked PS/DVB beads, it is functionalized with a recombinant Protein A ligand for selective capture of Fc-containing immunoglobulins (excluding IgG3). Its rigid polymer matrix provides greater mechanical stability than conventional soft-gel resins, supporting high-flow, high-pressure, and high-throughput analytical operation.

This structural robustness translates into high operational efficiency, supporting flow rates of up to 3 mL/min and total cycle times as short as 0.5 min. The column also offers a broad linear dynamic range of up to 40 mg/mL, with a limit of detection (LOD) as low as 0.294 µg at UV 280 nm, enabling reliable quantification across diverse sample types, including complex CHO cell lysate matrices. With a lifetime exceeding 2,000 injections and strong lot-to-lot reproducibility, ProAqa Excel is fully compatible with UPLC, HPLC, and FPLC systems, making it a versatile and dependable tool for modern bioprocess monitoring and quality control.

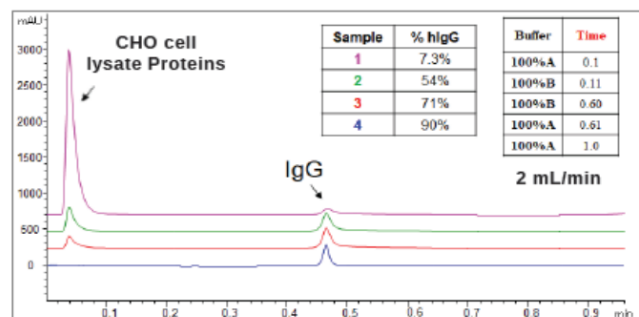
Figure 2. Fast Titer Determination Analysis can be achieved by optimizing the running conditions.

Fast hlgG Test with CHO Cell Lysate Proteins



Column: ProAqa Excel, 2.1 x 30 mm (PN:271120980-2103S); **Mobile Phase:** A: 50 mM Sodium phosphate, 150 mM NaCl, pH 7.0, B: 100 mM Glycine, pH 2.5; **System:** Agilent 1260; **Column Temperature:** ambient; **Detection:** UV 280 nm; **Sample:** 2.0 mg/mL hlgG+ lysate; **Injection volume:** 10 µL

Various Amounts of CHO Cell Lysate Proteins



Order Information

Phase	Part Number	Particle size	Pore size	Column Dimension
Proteomix POR-SA Affinity HTP	272221-4605P	20 μm	1000-2000 \AA	4.6 \times 50 mm
Proteomix POR-SA Affinity HTP	272221-2105P	20 μm	1000-2000 \AA	2.1 \times 50 mm
ProAqa Excel Protein A Affinity	271120980-4610P	20 μm	1000-2000 \AA	4.6 \times 100 mm
ProAqa Excel Protein A Affinity	270020980-4605P	20 μm	1000-2000 \AA	4.6 \times 50 mm
ProAqa Excel Protein A Affinity	271120980-4603P	20 μm	1000-2000 \AA	4.6 \times 35 mm
ProAqa Excel Protein A Affinity	270020980-2105P	20 μm	1000-2000 \AA	2.1 \times 50 mm
ProAqa Excel Protein A Affinity	270020980-2103P	20 μm	1000-2000 \AA	2.1 \times 35 mm
BioService Affinity HSA	272101-4605P	20 μm	1000-2000 \AA	4.6 \times 50 mm
BioService Affinity HSA	272101-2105P	20 μm	1000-2000 \AA	2.1 \times 50 mm
Proteomix POR50-dT20	272221-4605P	50 μm	3000 \AA	4.6 \times 50 mm

For information regarding additional column dimensions or custom hardware configurations, please contact our sales team.

For service and technical support, go to www.sepax-tech.com, call Toll-free in US: (877)-SEPAX-US, or email us at techsupport@sepax-tech.com.