Next-Generation Protein A Resin for Streamlined Antibody Processing

Casper Paludan, Anna Wehlin and Mikael Andersson Schönn
Bio-Works, Uppsala, Sweden

WorkBeads™ affimAb Edge is a next-generation resin in the affimAb series, engineered for efficient purification of monoclonal antibodies and any Fc-containing fragment or fusion product from laboratory to process scale. Built on an improved macroporous agarose-based matrix and coupled with an alkali-stable protein A ligand, WB affimAb Edge combines high dynamic binding capacity (DBC) with superior pressure flow characteristics. The result is faster processing, reduced elution volumes, and robust performance across multiple purification cycles.

WorkBeads™ affimAb Edge

High DBC, with >60 mg/mL at 4 min and >70 mg/mL at 6 min residence time, enabling efficient purification and lower process costs.

Superior pressure flow properties supporting high flow velocities at low back pressure, enabling faster cycle times and robust scale-up.

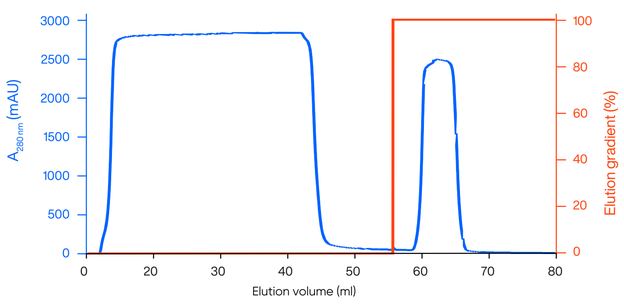
Strong alkali stability enables repeated cleaning and sanitization using 0.5 M NaOH for extended resin lifetime and improved process economy.

Cost-effective performance, competitive with leading Protein A resins while delivering improved process economics.

Purification of Monoclonal Antibodies

(A)

Column:	WorkBeads affimAb Edge, 3.4 ml
Running buffer:	PBS pH 7.4
Elution buffer:	50 mM Citrate pH 3.5
Sample:	35 ml CHO cell supernatant
Flow rate:	0.855 ml/min (150 cm/h) (4 min RT)
Gradient:	100% Elution buffer in 20 CV



(B)

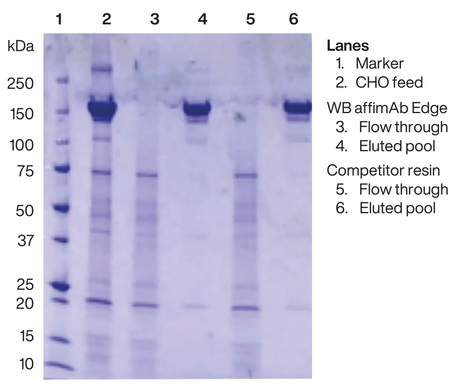
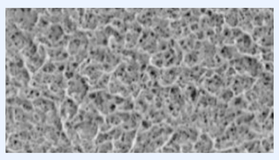
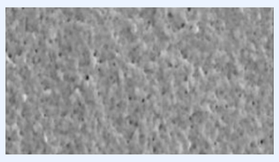


Figure 1. (A) Purification of a monoclonal IgG from CHO cells using WorkBeads affimAb. The blue line corresponds to the absorbance at 280 nm and the red line is the elution gradient. (B) Purity analysis by SDS-PAGE, non-reduced conditions. Comparison of mAb purified by identical methods on WorkBeads affimAb and a competitor resin.

Maximized Porosity and Available Surface Area



WB affimAb Edge



Competitor product

Figure 2. Image comparison of the surface of WB affimAb Edge and a competitor resin highlighting the coarse surface which provides affimAb with its increased capacity.

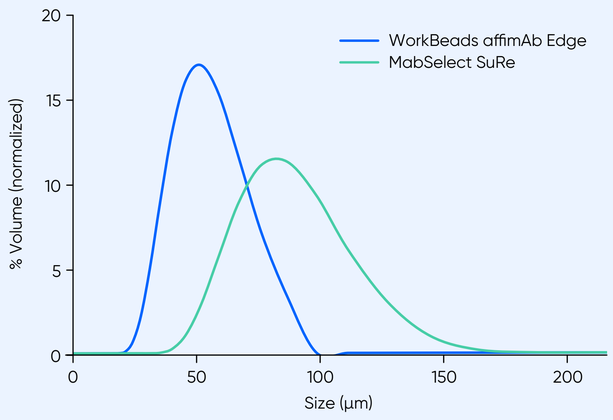


Figure 3. Particle size distribution comparison for WorkBeads affimAb Edge (blue) and Competitor resin (green).

With an increased pore size diameter of more than 50%, Edge facilitates faster and more efficient target diffusion while the coarse surface provides excellent available area for target binding.

The uniform bead size distribution ensures repeatable performance and helps enhance capacity and elution volumes.

Process Ready Flow Characteristics

WorkBeads affimAb Edge introduces a completely novel base matrix design. The innovative matrix allows WB affimAb Edge to generate lower pressure at a set flow rate while also resisting higher total pressure compared to legacy products.

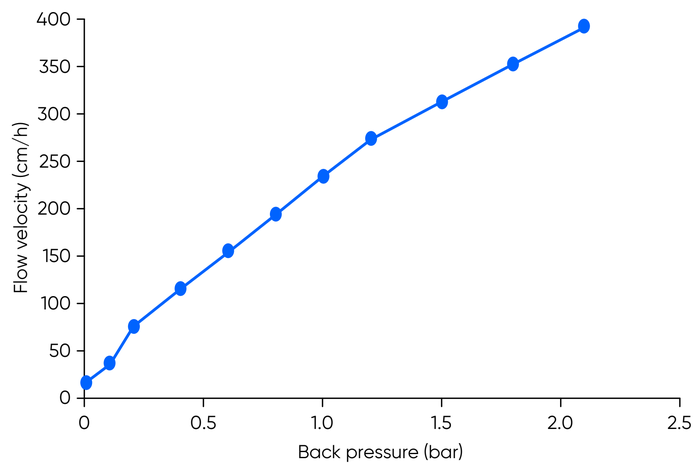
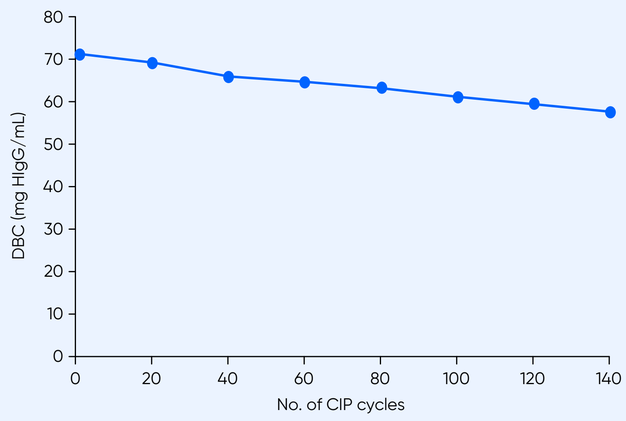


Figure 4. Pressure-flow data on WorkBeads affimAb Edge base matrix in water obtained in a 140 × 200 mm open bed glass column. The pressure over the bed at low flow rates is often too low to detect.

Ligand with Proven Record of Alkaline Stability



WB affimAb Edge utilizes a protein A ligand with a well proven track record, but now with an improved coupling technology ensuring a robust and stable product.

> 80% after 140 cycles
> 70% after 200 cycles

Figure 5. Dynamic binding capacity on WorkBeads affimAb Edge determined by frontal analysis at 4 minutes residence time during CIP cycling with 0.5 M NaOH at 15 minutes contact time.

High Dynamic Binding Capacity

With its cost-effective design and competitive performance, WB affimAb Edge enables greater process efficiency and improved overall economics for antibody purification workflows.

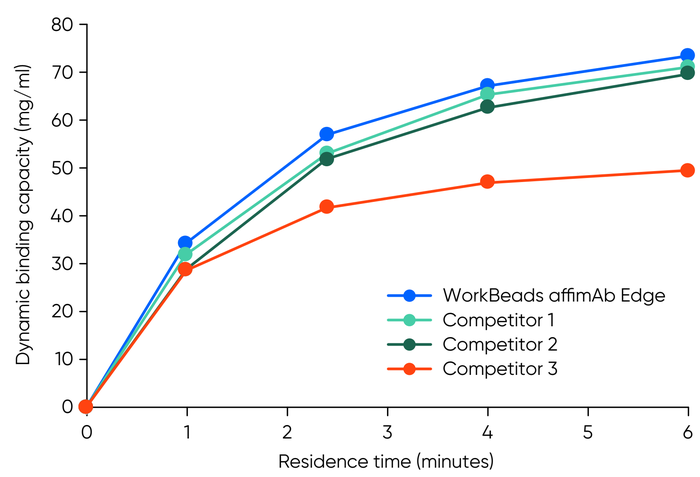


Figure 6. Dependency of dynamic binding capacity on residence time. Determined by frontal analysis using 1 mg/mL HIgG in PBS, pH 7.4 was performed in a 5 × 100 mm packed bed.

Experience the Edge
Request your sample today

bio-works.com

Bio-Works, WorkBeads and GoBio are trademarks of Bio-Works Technologies. All third-party trademarks are the property of their respective owners.

© Bio-Works. All goods and services are sold subject to Bio-Works terms and conditions of sale. Contact your local Bio-Works representative for the most current information.

Bio-Works, Virdings allé 18, 754 50 Uppsala, Sweden. For local office contact information, visit bio-works.com/contact.

PS40810002AA

Bio-Works