

TOYOPEARL® NH₂-750F

A Salt Tolerant Anion Exchange Resin from Tosoh Bioscience

TOYOPEARL
PRODUCT OVERVIEW

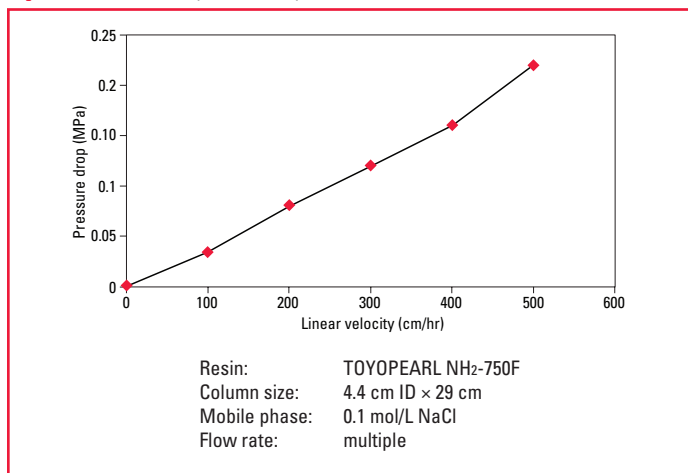
Introduction

Tosoh Bioscience has developed a salt tolerant anion exchange resin, TOYOPEARL NH₂-750F, capable of aggregate removal in both flow-through and binding and elution modes. This new resin is ideal for process scale applications from the capture of proteins from biological feedstock (mammalian cell culture, plasma, bacterial feedstock, etc.) without dilution to the intermediate or final purification of monoclonal antibodies (mAbs) where aggregates and other impurities are removed from the target of interest.

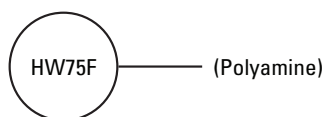
A TOYOPEARL HW-75 polymeric bead has been functionalized with a primary amine-containing ligand resulting in a resin with increased salt tolerance and selectivity different than that of quaternary amine anion exchange resins currently available. The salt tolerance of this resin, combined with a > 100 nm pore size, makes TOYOPEARL NH₂-750F ideal for applications performed in physiological conditions or for post-protein A removal of aggregates.

TOYOPEARL NH₂-750F offers binding capacities approaching 70 g/L for bovine serum albumin across a range of pH values and conductivities, exhibits excellent pressure-flow characteristics (*Figure 1*) and the 30-60 µm particle size is stable up to 0.3 MPa.

Figure 1. Flow rate vs. pressure drop



STRUCTURE:



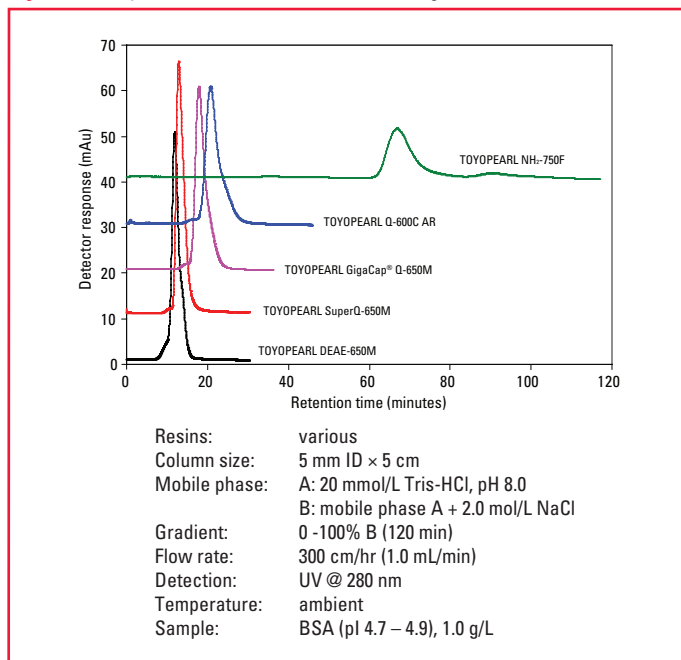
Product Attributes

Pore size (mean):	> 100 nm
Particle size (mean):	45 µm
Pressure rating:	0.3 MPa
Shipping buffer:	20% ethanol
pH stability:	2-13
Shelf life (estimated):	10 years

Increased salt tolerance of TOYOPEARL NH₂-750F as compared to other TOYOPEARL anion exchange resins can be seen in *Figure 2*. The BSA peak begins to elute from the TOYOPEARL NH₂-750F column at a concentration of approximately 1.0 mol/L NaCl compared to 0.14 – 0.40 mol/L for the other anion exchange resins.

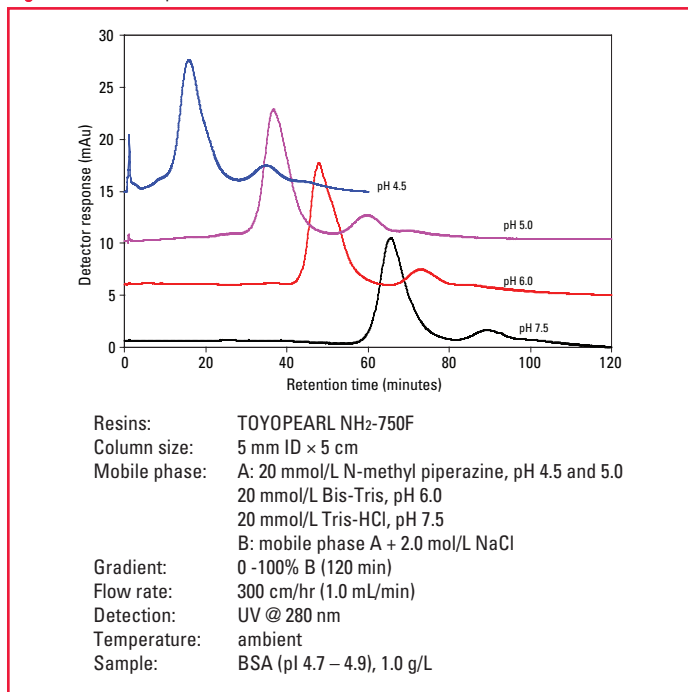
Note: The use of multivalent salts with TOYOPEARL NH₂-750F may have adverse effects on the binding capacity of the resin. Please use only monovalent salts.

Figure 2. Comparative salt tolerance of anion exchange resins



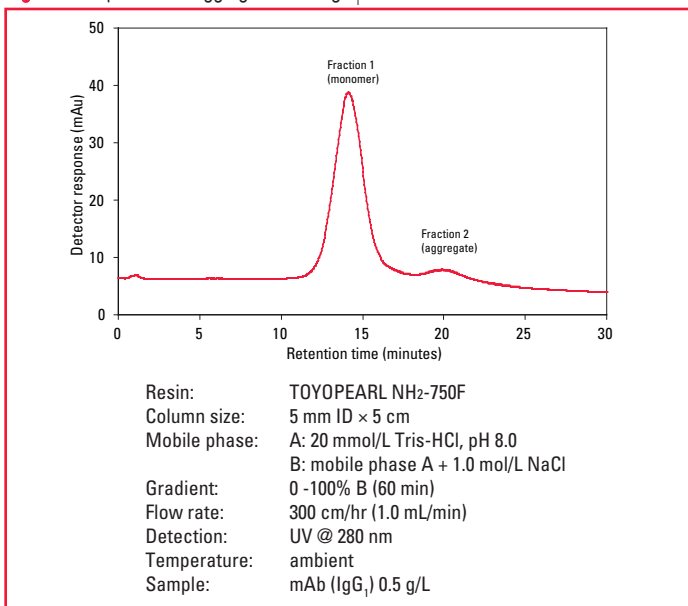
Salt tolerance can be affected by mobile phase pH (*Figure 3*) without greatly changing the selectivity of the resin. This allows for a large design space in which to develop a separation protocol.

Figure 3. Effects of pH on BSA elution from TOYOPEARL NH₂-750F



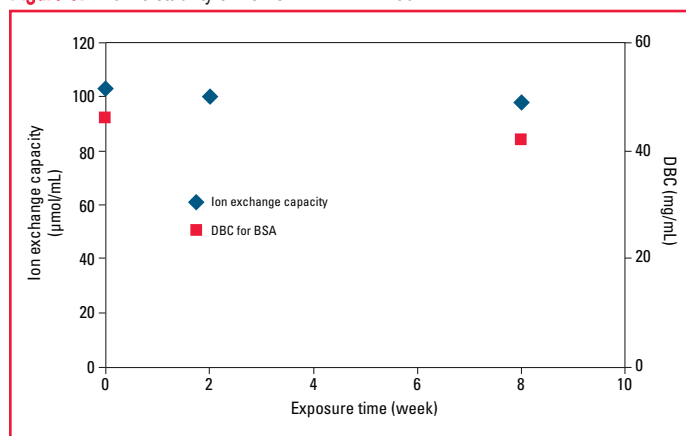
TOYOPEARL NH₂-750F is effective at removing aggregates from mAbs, as demonstrated in *Figure 4*. SEC analysis of the peaks (data not shown) shows that high molecular weight aggregates are completely removed from the main mAb peak.

Figure 4. Separation of aggregates from IgG, monomer on TOYOPEARL NH₂-750F



TOYOPEARL NH₂-750F is alkaline stable in 0.5 mol/L NaOH, and can be stored in this solution for up to 8 weeks with little appreciable loss of capacity (*Figure 5*).

Figure 5. Alkaline stability of TOYOPEARL NH₂-750F



Ordering Information

Part #	Description	Resin Volume
23438	TOYOPEARL NH₂-750F, 45 µm	100 mL
23439	TOYOPEARL NH₂-750F, 45 µm	250 mL
23440	TOYOPEARL NH₂-750F, 45 µm	1 L
23441	TOYOPEARL NH₂-750F, 45 µm	5 L
23442	TOYOPEARL NH₂-750F, 45 µm	50 L
Part #	Description	Resin Volume
23443	ToyoScreen NH₂-750F, 45 µm	1 mL × 6
23444	ToyoScreen NH₂-750F, 45 µm	5 mL × 6

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