

Affinity Chromatography Phases

- Choice of 3 affinity ligands
- Rigid polymeric base resin
- Products for analytical, preparative through to process scale
- Wide pH range

Affinity chromatography offers the highest level of specificity and selectivity in biomolecular separations and purifications. TSKgel® affinity columns are based on G5000PW (5PW) porous resin and are available in two group-specific stationary phases and one activated packing (Tresyl-5PW). Process scale media, based on TOYOPEARL HW-65 resin (65µm) made by the same polymer chemistry, enable easy scale-up. The choice of a specific ligand is determined by the expected interaction between sample and column bonded phase.

TSKgel® Affinity Phases

TSKgel Affinity Phase	Ligand Type	Particle Size (µm)	Pore Size (Å)	pH Range	Adsorption Capacity
Boronate-5PW	m-Aminophenyl boronate	10	1000	2 - 9	40µmol/ml resin for sorbitol
Chelate-5PW	Iminodiacetic acid	10	1000	2 - 12	-
Tresyl-5PW	Tresyl	10	1000	2 - 12	>60mg/g dry resin for soybean trypsin inhibitor

Boronate-5PW

Under alkaline conditions the boronate anionic structure of the TSKgel Boronate-5PW can bind with 1,2 cis-diol groups, such as those in carbohydrates, carbohydrate-containing compounds and catecholamines. This interaction is enhanced in the presence of Mg²⁺ ions and inhibited by amine-containing buffers.

Chelate-5PW

TSKgel Chelate-5PW utilizes the ability of iminodiacetic acid to chelate ions such as Zn²⁺ and Cu²⁺. Peptides and proteins containing histidine residues can adsorb to these chelated ions at neutral pH and then be eluted with buffer. Applications for Chelate-5PW include immunoglobulins, transferrins, lectins, milk proteins and membrane proteins. Figure 15 shows the separation of porcine pancreatic elastase on a TSKgel Chelate-5PW column loaded with copper ions.

Tresyl-5PW

The Tresyl-5PW (2,2,2-trifluoroethanesulphonyl) requires activation with a user-selected ligand containing amino, thiol, phenol or imidazole groups. This results in a 'custom' affinity ligand. Principal applications include the selective purification of antigens after coupling of the appropriate antibody.

Column: TSKgel Chelate-5PW (75 x 7.5mm)
 Column loaded with copper ions
 Eluent: A: 0.5M NaCl in 20mM phosphate buffer, pH 7.0
 B: A + 20mM imidazole
 Linear gradient A to B over 30 mins
 Flow rate: 1ml/min

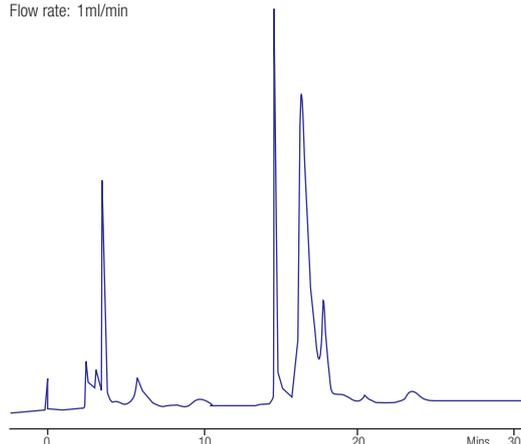
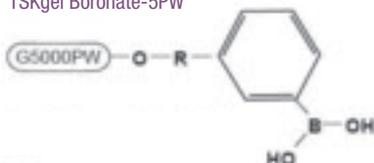
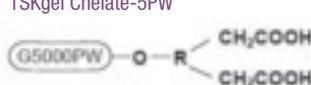


Figure 15. Separation of porcine pancreatic elastase by immobilized metal ion affinity chromatography

TSKgel Boronate-5PW



TSKgel Chelate-5PW



TSKgel Tresyl-5PW



Ordering Information – Affinity Phases

TSKgel Phase	Column Dimensions (mm)		Guardgel Kit ¹ (For 7.5mm i.d. Columns)
	40 x 6.0	75 x 7.5	
Boronate-5PW	-	13066	13125
Chelate-5PW	-	8645	8647
Tresyl-5PW	14455	14456	-

¹ 20µm material. Kit contains Guardgel, holder and connector