TOSOH

TSKgel® SP-3PW

INTRODUCTION

Ion exchange chromatography (IEC) is one of the most frequently used chromatographic modes for the separation and purification of biomolecules. It is used at all stages and scales of purification of therapeutic proteins: from laboratory scale purification to industrial scale downstream processing. TSKgel IEC resins are hydrophilic, macroporous media available with various ligands and in different particle and pore sizes.

TSKgel resins are based on a highly cross-linked polymethacrylate particle showing even higher pressure tolerance than the well known Toyopearl bioprocess resins. Their smaller particle sizes of 20 or 30 µm make TSKgel resins an excellent choice for polishing and high performance resolution steps. TSKgel SP-3PW (30) is a strong cation exchange resin designed for efficient purification of small proteins or peptides.

HIGHLIGHTS

- Strong cation exchange resin
- Typical insulin dynamic binding capacity of 49 g/L
- Small, rigid polymethacrylate beads
- Narrow particle size distribution

MICROSCOPIC IMAGE TSKgel SP-3PW

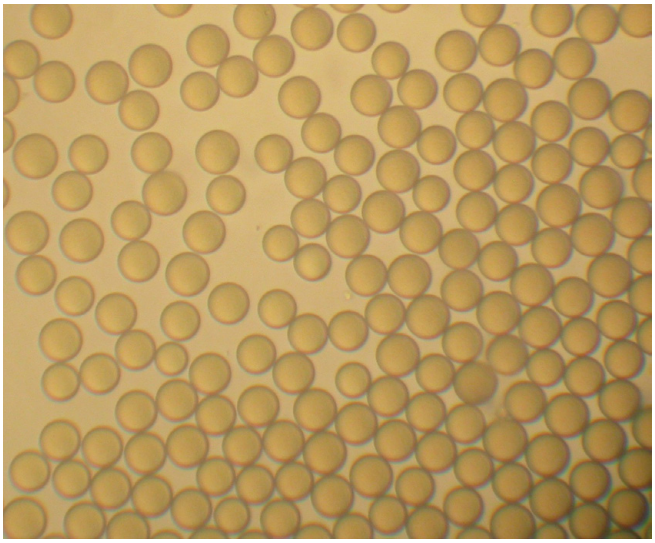

Figure 1

FEATURES

TSKgel SP-3PW (30) is a strong cation exchange resin having a smaller pore size than the corresponding TSKgel SP-5PW (30) material. The technologies used in the manufacturing processes of the two resins are different. Therefore the particle size distribution of the new TSKgel SP-3PW (30) resin is more narrow than the particle size distribution of TSKgel SP-5PW (30). Due to the small - 30 µm - mean diameter and the narrow particle size distribution, TSKgel SP-3PW (30) is ideally suited when resolution is an issue. Figure 1 shows a microscopic image of TSKgel SP-3PW (30) particles.

TSKgel SP-3PW (30) shows a unique selectivity. Elution order is different when compared to TSKgel SP-5PW (30). It also may offer more resolution than other commercial small particle resins (Figure 2).

SELECTIVITY COMPARISON

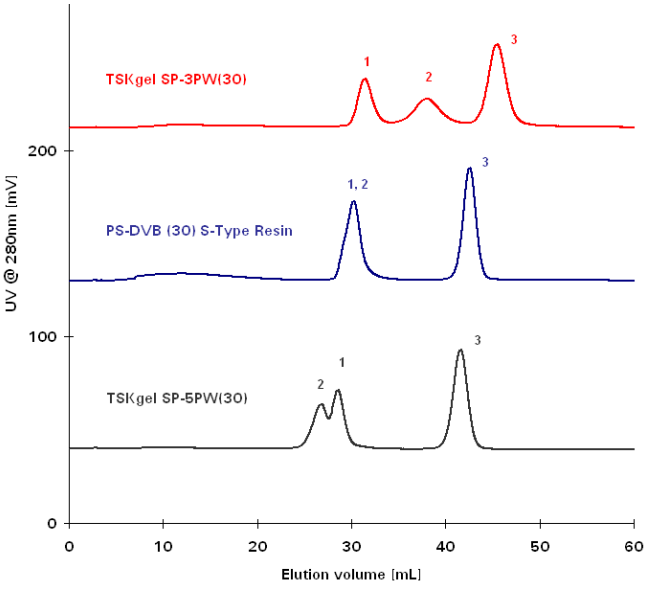

Figure 2

Column:	7.5 mm ID x 7.5 cm L
Mobile Phase:	A: 20 mM sodium citrate buffer (pH 3.2)/ethanol = 8/2 (v/v) B: 1.0 M NaCl in 20 mM sodium citrate buffer (pH 3.2)/ethanol = 8/2 (v/v)
Gradient:	60 min linear gradient from Buffer A to Buffer B
Flow rate:	1.0 ml/min
Detection:	UV @ 280 nm
Temperature:	RT
Sample:	1. trypsinogen, 2. insulin, 3. lysozyme; 100 µL (0.5 mg/ml each)

TSKgel SP-3PW (30) was developed to provide high dynamic binding capacities (DBC) for peptides and small proteins. Table 1 shows a comparison of insulin dynamic binding capacities of various resins.

A typical DBC of 49 g/L for insulin makes TSKgel SP-3PW (30) attractive for all peptide and small protein purification tasks that involve a cation exchange step.

INSULIN DYNAMIC BINDING CAPACITIES

	TSKgel SP-3PW (30)	TSKgel SP-5PW (30)	PS-DVB (30) S Type Resin
Matrix	polymethacrylate	polymethacrylate	polystyrene divinylbenzene
Particle size	30 µm	30 µm	30 µm
Insulin DBC	49 g/L	24 g/L	45 g/L
Ion exchange capacity	0.12 eq/L	0.09 eq/L	0.08 eq/L
Pore size	25 nm	100 nm	NR

Table 1

Column: 4.6 mm ID x 7.5 cm L
Eluent: Acidic buffer (pH 3.0) containing neutral salt and 1-propanol
Flow rate: 0.75 ml/min (270 cm/h)
Sample: Recombinant insulin (7.2 g/L)

DBC calculated at 10% breakthrough

For further details of choice and selection of the TOYOPEARL® or TSKgel® resin that best suits your particular separation needs, please contact us:
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Ordering information

TSKgel SP-3PW (30)

Part-No	Description	Resin volume	Pore size	Particle size
21976	TSKgel SP-3PW (30)	25 mL	25 nm	30 µm
21977	TSKgel SP-3PW (30)	250 mL	25 nm	30 µm
21978	TSKgel SP-3PW (30)	1 L	25 nm	30 µm
21979	TSKgel SP-3PW (30)	5 L	25 nm	30 µm