

TSKgel PW_{XL}-CP Columns

Size Exclusion Chromatography Columns
for Cationic Polymer Analysis

TSKgel
PRODUCT OVERVIEW

Introduction

TSKgel PW_{XL}-CP size exclusion columns were specifically developed for the analysis of water-soluble cationic polymers. Three columns are available within the TSKgel PW_{XL}-CP series, each with a different particle size, separation range and exclusion limit, allowing polymers within a wide molecular mass range to be separated and characterized.

The analysis of cationic polymers requires a high salt concentration in the mobile phase to prevent adsorption of the polymers onto the particles in SEC columns. As a result, many polymer researchers encounter low recovery when analyzing cationic polymers, as well as poor reproducibility from run to run.

The TSKgel PW_{XL}-CP columns eliminate ionic adsorption onto the particle by incorporating a cationic functionality on the particle surface. This modification results in high recovery for cationic polymers and enables elution under low salt conditions. These columns show high theoretical plate values, linear calibration curves and high durability because the base resin is the same as that used in the TSKgel PW_{XL} series columns.

Product Highlights

- High recoveries for cationic polymers (See Table 2)
- High reproducibility over time without adsorption (See Figure 1)
- Column offering allows separation of wide MW range of polymers
- Elution under low salt conditions

Properties of TSKgel PW_{XL}-CP columns

Table 1

	G3000PW _{XL} -CP	G5000PW _{XL} -CP	G6000PW _{XL} -CP
Base material	Polymethacrylate	Polymethacrylate	Polymethacrylate
Particle size	7µm	10µm	13µm
Exclusion limit (Da)	100,000	1,000,000	20,000,000
Separation range (Da), (PEO, PEG)	200-50,000	400-500,000	1,000-10,000,000
Theoretical plates	16,000	10,000	7,000

Table 2

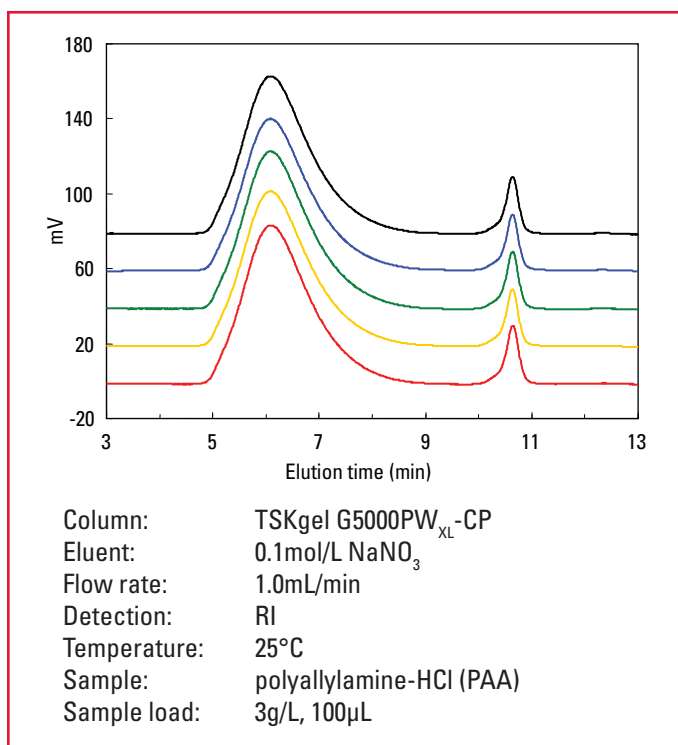
Column	Recovery
G3000PW _{XL} -CP	100.2%
G5000PW _{XL} -CP	98.8%
G6000PW _{XL} -CP	97.4%

Sample: Polyallylamine-HCl (PAA), MW: 438,000Da

Eluent: 0.1mol/L NaNO₃

PAA was injected onto a TSKgel G5000PW_{XL}-CP column. Each chromatogram, from the first injection (red) to the fifth injection (black), showed similar elution profiles without any adsorption of the polymer.

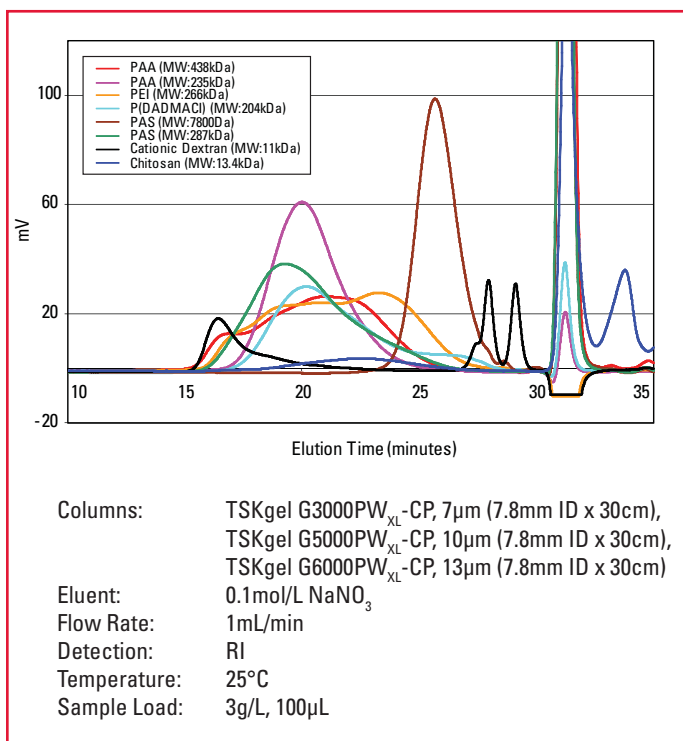
Figure 1



Application

Various cationic polymers with different functional groups and molecular weights were injected on the TSKgel PW_{XL}-CP columns (TSKgel G6000PW_{XL}-CP, G5000PW_{XL}-CP and G3000PW_{XL}-CP, connected in series). *Figure 2* demonstrates that these new SEC columns can be utilized for the analysis of a wide variety of cationic polymers.

Figure 2



Ordering Information

Part #	Description	Matrix	Housing	ID (mm)	Length (cm)
21873	TSKgel G3000PW_{XL}-CP, 7μm, 200Å	Polymer	Stainless Steel	7.8	30
21874	TSKgel G5000PW_{XL}-CP, 10μm, 1000Å	Polymer	Stainless Steel	7.8	30
21875	TSKgel G6000PW_{XL}-CP, 13μm, >1000Å	Polymer	Stainless Steel	7.8	30
21876	Guard Column for 7.8mmID TSKgel G3000-G6000PW_{XL}-CP columns	Polymer	Stainless Steel	6	4



TOSOH

TOSOH BIOSCIENCE

TOSOH Bioscience LLC
3604 Horizon Drive, Suite 100
King of Prussia, PA 19406
Orders & Service: (800) 366-4875
Fax: (610) 272-3028
www.separations.us.tosohbioscience.com
email: info.tbl@tosoh.com