

# SEC Analysis of Sodium Polystyrene Sulfonate

## Application Note

### Author

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### Introduction

Sodium polystyrene sulfonate is an ion-exchange resin used to treat high levels of blood potassium by substituting potassium in the diet and body for sodium in the resin. The potassium is then excreted and levels in the body are reduced. A sample of sodium polystyrene sulfonate was analyzed by aqueous SEC using Agilent PL aquagel-OH columns. These columns combine high pore volume and high column efficiency (>35,000 plates/meter) for maximum resolution. As the polymers are both ionic and relatively hydrophobic, eluent conditions are chosen to minimize sample to column interaction, which would otherwise result in late elution times.

Verified for Agilent  
1260 Infinity  
GPC/SEC System



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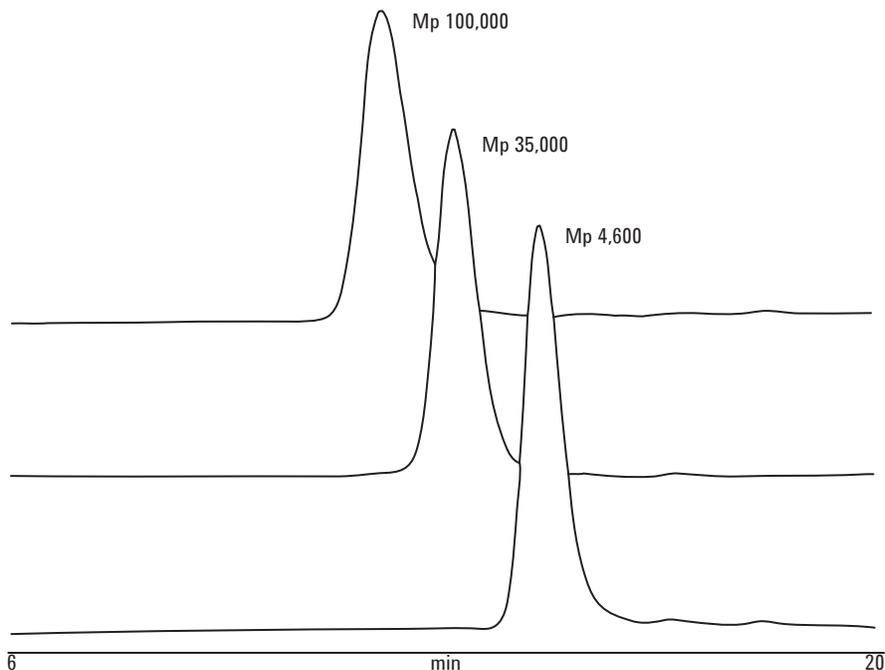
#### Conditions

Samples: Sodium polystyrene sulfonates  
Columns: 2 x PL aquagel-OH 40 8  $\mu\text{m}$ ,  
300 x 7.5 mm (p/n PL1149-6840)  
Eluent: 80 % 0.3 M  $\text{NaNO}_3$  + 0.01 M  
 $\text{NaH}_2\text{PO}_4$  at pH 9 + 20 % Methanol  
Flow Rate: 1.0 mL/min  
Detection: RI

## Conclusion

SEC using PL aquagel-OH columns successfully analyzed samples of sodium polystyrene sulfonate. Aqueous SEC not only provides molecular weight data but also provides information on the polydispersity and the shape of the molecular weight distribution. The excellent chemical and mechanical stability of these columns offer high performance with good repeatability and column lifetime.

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**Figure 1. Raw data chromatograms of three samples of sodium polystyrene sulfonate**

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