SEC Analysis of Polyacrylic Acid

Application Note

Authors

Greg Saunders, Ben MacCreath
Agilent Technologies, Inc.

Introduction

Polyacrylic acid is a resin formed by the polymerization of acrylic acid. It is water soluble and used as a suspending agent for sizing cloth, and in hydraulic fluids, adhesives and paints. A sample of the polymer 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. A salt/buffer eluent was necessary as polyacrylic acids are polyelectrolytes.

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Conditions

Samples: Polyacrylic acids
Columns: 2 x PL aquagel-OH 50 8 µm, 300 x 7.5 mm (p/n PL1149-6850)
Eluent: 0.25 M $NaNO_3$ + 0.01 M NaH_2PO_4 at pH 7
Flow Rate: 1.0 mL/min
Detection: RI

Results and Discussion

Figure 1 shows a chromatogram of a separation of two polyacrylic acids that have typical polydispersities of 1.3-1.7.

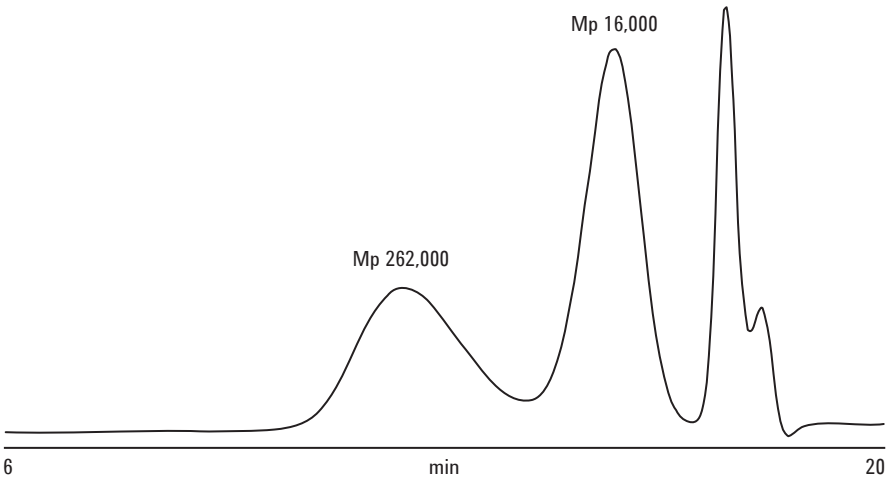

Figure 1. Separation of two polyacrylic acids

Conclusion

SEC using PL aquagel-OH columns successfully analyzed samples of polyacrylic acid. 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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