



SEC Analysis of Gum Arabic

Application Note

Author

Graham Cleaver
Agilent Technologies, Inc.

Introduction

Gum arabic is a polysaccharide used widely in the food industry as a viscosity modifier or gelling agent. The physical properties and processibility of these water soluble polymers are related to their molecular weight distribution which can be determined by aqueous SEC. Agilent PL aquagel-OH 40 and 60 8 μm columns are ideal for this purpose because they combine low exclusion limit, high pore volume and high column efficiency ($>35,000$ plates/meter) for maximum resolution. In this case, the PL aquagel-OH connected in series covered a molecular weight range from 10^4 to 10^7 . Column calibration was done using pullulan standards.



Conditions

Samples: Two gum arabics
Columns: 2 x PL aquagel-OH 60 8 μm ,
300 x 7.5 mm (p/n PL1149-6860)
+ 1 x PL aquagel-OH 40 8 μm ,
300 x 7.5 mm (p/n PL1149-6840)
Eluent: 0.01 M NaH_2PO_4 + 0.2 M NaNO_3 at
pH 7
Flow Rate: 1.0 mL/min
Detection: RI

Results and Discussion

The difference between two batches of gum arabic designated 'good' and 'bad' can be seen clearly by overlaying their molecular weight distributions, see Figure 1. A comparison of the distributions shows clear differences between the two batches, the 'bad' sample having considerably more high molecular weight material.

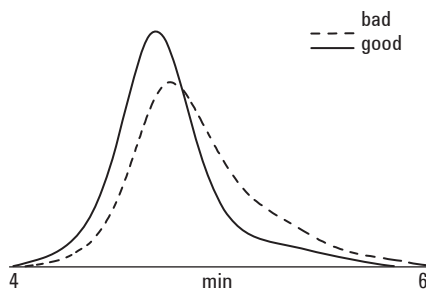


Figure 1. Overlay chromatogram showing molecular weight distributions of two batches of gum arabic designated 'good' and 'bad'

Conclusion

SEC and PL aquagel-OH columns successfully resolved two samples of gum arabic. The 'neutral' surface and ability to operate across a wide range of eluent conditions equip PL aquagel-OH for the high performance analysis of analytes with neutral, ionic and hydrophobic moieties, singly or combined.

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