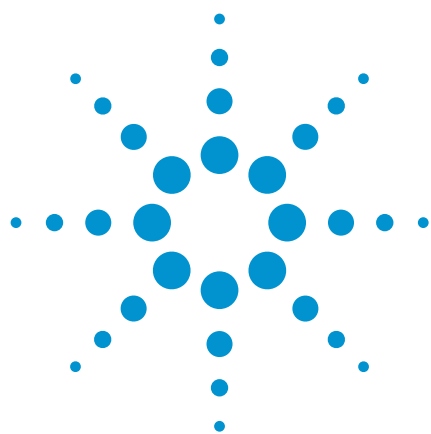




Analysis of starches by GPC with viscometry on the Agilent PL-GPC 50 Plus

Application Note

Authors

Ben MacCreath, Greg Saunders
Agilent Technologies, Inc.

Introduction

Starches are polysaccharides that have a great many industrial applications with a very important role in the food industry. The source of the starch leads to different properties and therefore different end uses within the food industry. For example, corn starch is suited for confectionary products whereas potato starches are used in processed meats. The molecular distribution and weight of the polymer determines many of the final properties of the polymer and therefore the end-use suitability.

The accurate molecular weight distributions of two samples of starch were investigated by GPC with viscometry. The information obtained by employing a viscometer can highlight structural and/or chemical differences between the polymers.



Agilent Technologies

Chromatography Conditions

Columns: 2 x Agilent PL aquagel-OH MIXED-H 8 μ m,
300 x 7.5 mm (part number PL1149-6800)
Eluent: 0.2M NaNO_3 + 0.01M NaH_2PO_4 , adjusted to pH 7
Detectors: PL-GPC 50 Plus differential refractive index,
Agilent PL-BV 400RT viscometer
Injection Loop: 200 μ L
Calibration Standards: Agilent PEO/PEG EasiVials
Flow Rate: 1.0 mL/min
Sample Concentration: 2.0 mg/mL

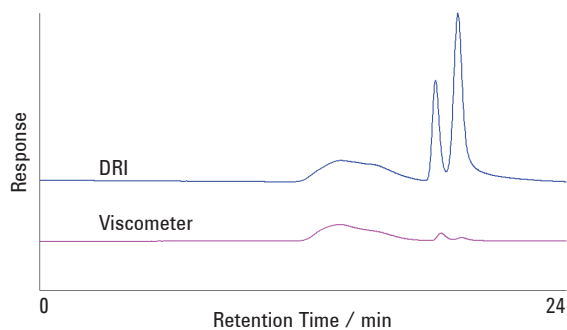


Figure 1. Chromatograms for an example starch sample

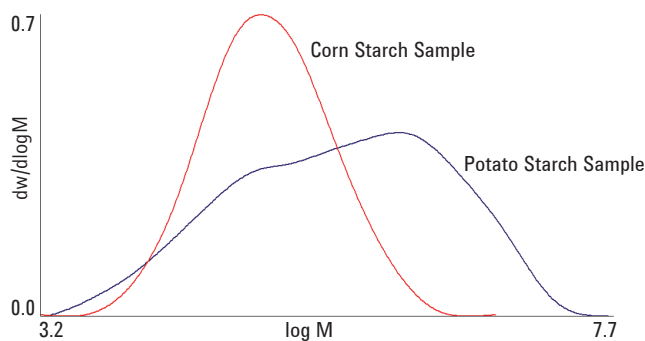


Figure 2. Overlaid molecular weight distributions for two starch samples

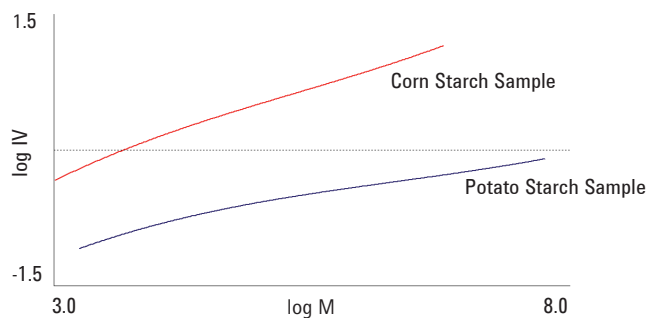


Figure 3. Overlaid Mark-Houwink plots for two starch samples

Conclusion

Two samples of starch were analyzed by the Universal Calibration technique on the PL-GPC 50 Plus. Stark differences in the molecular weight distributions were observed with one of the samples having a bi-modal distribution. The Mark-Houwink plots indicated that the materials were chemically or structurally very different.

www.agilent.com/chem

This information is subject to change without notice.

© Agilent Technologies, Inc. 2010

Published in UK, September 2, 2010

SI-01490



Agilent Technologies