Polyurethane Analysis on Agilent PLgel 5 µm MIXED-D with Gel Permeation Chromatography

Application Note

Materials Testing and Research, Polymers

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Introduction

Polyurethanes are synthetic resins containing urethane links (-NH-CO-O-) manufactured by polyaddition from isocyanate esters and polyhydric alcohols. These durable polymers are widely used in solid foams, plastics, and paints.

The resolving range of the Agilent PLgel 5 µm MIXED-D column (200–400,000 MW) allows excellent resolution of both the high molecular weight portion of a polyurethane sample and the lower MW components.

Polyurethane Analysis

The Agilent PLgel 5 µm MIXED-D column is specifically designed for the analysis of polymers, paints, and resin systems where material above 400,000 MW is unlikely to be present. The columns are ideal for the analysis of polyurethanes, as shown in Figure 1.

Conditions

Columns	2 × Agilent PLgel MIXED-D, 300 × 7.5 mm, 5 µm (p/n PL1110-6504)
Eluent	THF
Flow Rate	1.0 L/min
Detector	RI
System	Agilent PL-GPC 50

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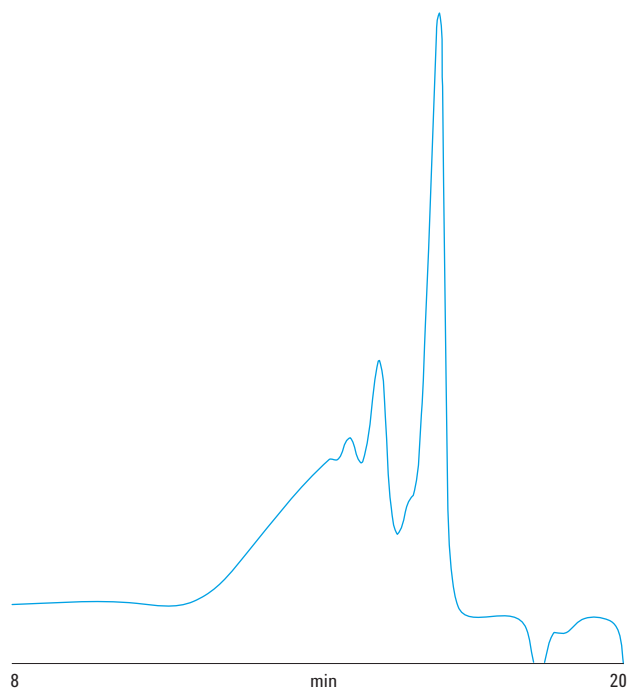
Figure 1. *High and low molecular weight components in a sample of polyurethane separated on an Agilent PLgel 5 µm MIXED-D two-column set.*

Conclusion

The results show it is possible to deternine the molecular weight distribution of polyurethane with Agilent PLgel 5 µm MIXED-D columns.

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