Polyetherimide Analysis on Agilent PLgel with Gel Permeation Chromatography

Application Note

Materials Testing and Research, Polymers

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Introduction

Polyetherimide (PEI) is a useful amorphous engineering thermoplastic. Its high performance, and hence utility, stems from high heat resistance, high strength, and stable electrical properties. PEI is also easy to process. In its unmodified form the resin is transparent and has inherent dimensional stability that makes it flame retardant.

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Analysis of a Polyetherimide

In this analysis of polyetherimide, ethylene glycol was used as a flow-rate marker. Figure 1 shows the distribution of the polymer with good resolution of the oligomeric components. The calculated molecular weights and dispersity are shown in Table 1.

Calibrants	Agilent PEO/PEG
Columns	Agilent PLgel 5 µm 10^4Å, 300 × 7.5 mm (p/n PL1110-6540)
	Agilent PLgel 5 µm 500Å, 300 × 7.5 mm (p/n PL1110-6525)
Eluent	DMF + 0.1% LiBr
Flow rate	1.0 mL/min
Temp	60 °C
Detector	RI
System	Agilent PL-GPC 50

Table 1. Molecular Weights and Dispersity of a Sample of Polyetherimide

Mn	13,211
Mw	25,842
Mz	37,507
Dispersity	1.956

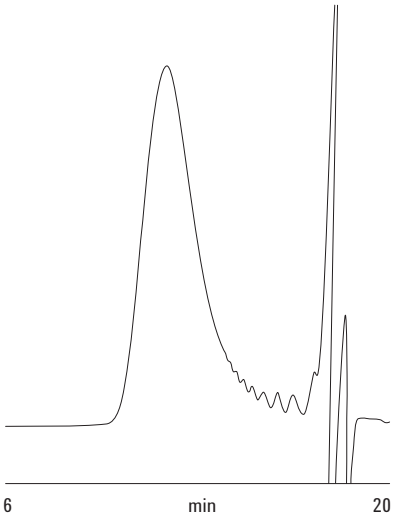

Figure 1. Good resolution of polyetherimide oligomers on Agilent PLgel 5 µm columns.

Conclusion

Agilent PLgel columns can be used in polar organic solvents to resolve the oligomeric content of polyetherimides, an important property that affects many end-use applications.

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