High Temperature Analysis of Polyethylene Terephthalates

Application Note

Materials Testing & Research, Polymers

Authors

Greg Saunders, Ben MacCreath
Agilent Technologies, Inc.

Introduction

Agilent PLgel 10 µm MIXED-B columns are designed for high MW polymer analysis under demanding eluent conditions such as high temperature gel permeation chromatography (GPC).

Agilent Technologies

Samples of polyethylene terephthalate (PET) were dissolved by heating to 110 °C for 30 min. The polymer remains in solution at room temperature but the high viscosity of the eluent means that high temperature GPC is necessary. Three grades of PET, with different intrinsic viscosities, were analyzed and compared on PLgel MIXED-B columns (Figures 1 and 2).

The PLgel 10 µm MIXED-B spans a wide range of molecular weights, up to 10 million, with a linear calibration curve. It is particularly useful for molecular weight distributions where slightly higher than average MWs are encountered. The 10 µm particle size provides good resolution with relatively low pressures for enhanced lifetimes in demanding conditions.

Conditions

Columns:	2 x PLgel 10 µm MIXED-B, 300 x 7.5 mm (p/n PL1110-6100)
Eluent:	Chlorophenol
Flow Rate:	1.0 mL/min
Temperature:	100 °C
Detection:	Agilent PL-GPC 220

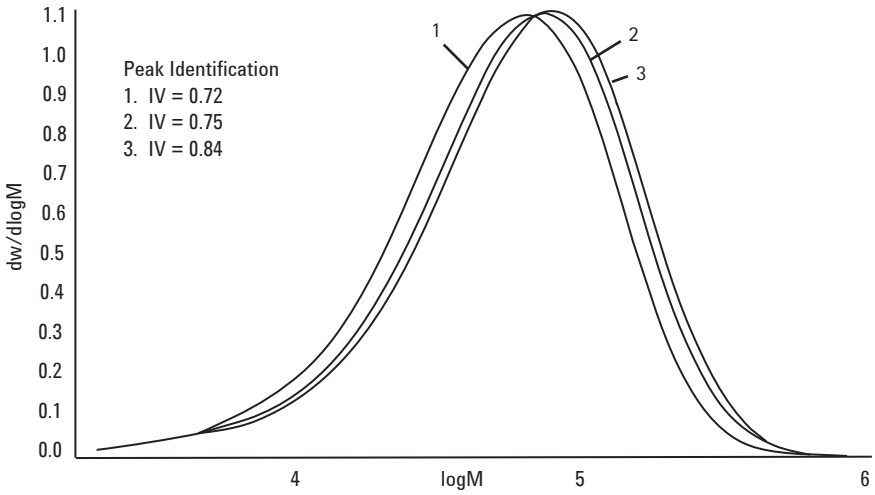

Figure 1. Molecular weight overlays of three polyethylene terephthalates

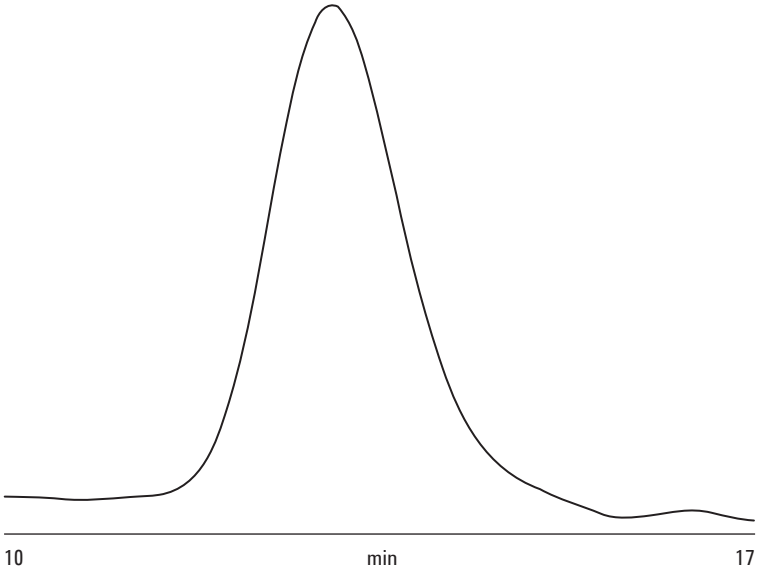

Figure 2. Chromatogram of a polyethylene terephthalate

www.agilent.com/chem

Published in UK, October 12, 2010
SI-01780

Agilent Technologies