Silicone Analysis on Agilent PLgel with Gel Permeation Chromatography

Application Note

Materials Testing and Research, Polymers

Author

Graham Cleaver

Agilent Technologies, Inc.

Introduction

Silicones are polymers of siloxane. They are widely used as oils, sealants, waxes, and rubbers. Because of their resistance to temperature and chemical degradation, they are used particularly in the electronic, construction, and motor industries.

In gel permeation chromatography, many silicones are analyzed with toluene as eluent as they show very little response in tetrahydrofuran with a refractive index detector.

Analysis of Silicone

Toluene is a preferred solvent for the analysis of silicone materials as it has a significantly higher refractive index, resulting in good response when using a refractive index detector. Figure 1 shows a relatively low molecular weight silicone oil, which contains a high proportion of oligomers.

Verified for Agilent
1260 Infinity
GPC/SEC System

Agilent Technologies

Conditions

Column	2 × Agilent PLgel 5 µm 500Å, 7.5 × 300 mm (p/n PL1110-6525)
Eluent	Toluene
Flow rate	1.0 mL/min
Detector	RI
System	Agilent PL-GPC 50

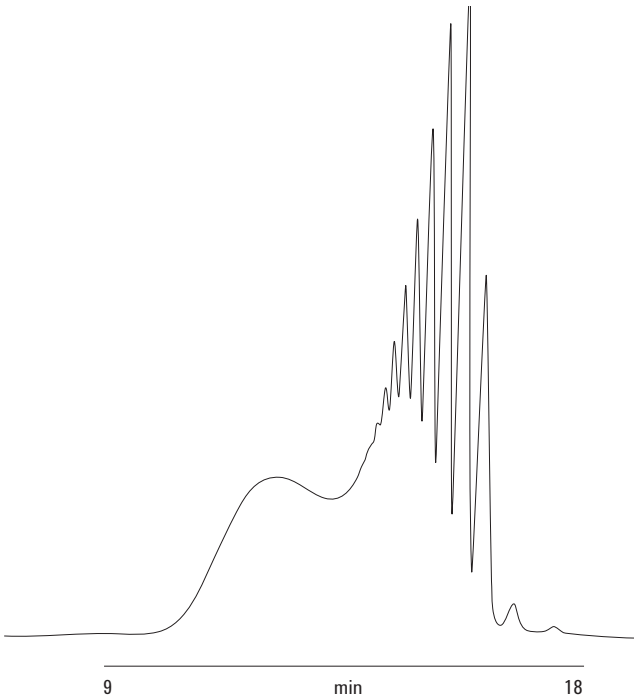

Figure 1. Separation of silicone with high oligomer content on an Agilent PLgel 5 µm column set.

Conclusions

Using toluene as a preferred solvent, Agilent PLgel columns effectively separate silicones with high oligomer content.

For More Information

These data represent typical results. For more information on our products and services, visit our Web site at www.agilent.com/chem.

www.agilent.com/chem

Printed in the USA
April 30, 2015
5990-8490EN

Agilent Technologies