

Analyze Injection-Molding Polymers on Agilent PLgel 5 μ m MIXED-C by GPC

Application Note

Materials Testing and Research

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Introduction

Injection-molding thermoplastics are used in a wide variety of applications, including panels for plastic doors, casings for scientific instruments, refrigerator linings, and telephone cases. Ideally, the materials should display excellent weather and impact resistance, good color retention and consistency, resistance to environmental stress, cracking, and high heat resistance. A number of copolymers have been developed that display these properties, such as copolymers of acrylonitrile/styrene/acrylate (ASA) and acrylonitrile/butadiene/styrene (ABS). Typically, these materials are either layered or blended to meet the requirements of a specific application.

This application note describes the analysis of a sample of an ASA/ABS-blended material from a car door panel by gel permeation chromatography (GPC), using Agilent PLgel 5 μ m MIXED-C columns.

Injection-Molding Polymer Analysis

Figure 1 shows the blended material that eluted as a single monomodal peak, indicating that the two components of the blend were very similar in molecular size, with an M_w of 160,000 g/mol and a polydispersity of 2.6.



Conditions

Samples	Blend of ASA and ABS
Columns	2 × Agilent PLgel 5 µm MIXED-C, 7.5 × 300 mm (p/n PL1110-6500)
Eluent	THF (stabilized)
Flow rate	1.0 mL/min
Inj vol	100 µL
Detector	RI
System	Agilent PL-GPC 50

Conclusions

Gel permeation chromatography with Agilent PLgel 5 µm MIXED-C columns permits the molecular weight distribution of polymers to be assessed, and the size of the molecular components in a polymer blend to be investigated.

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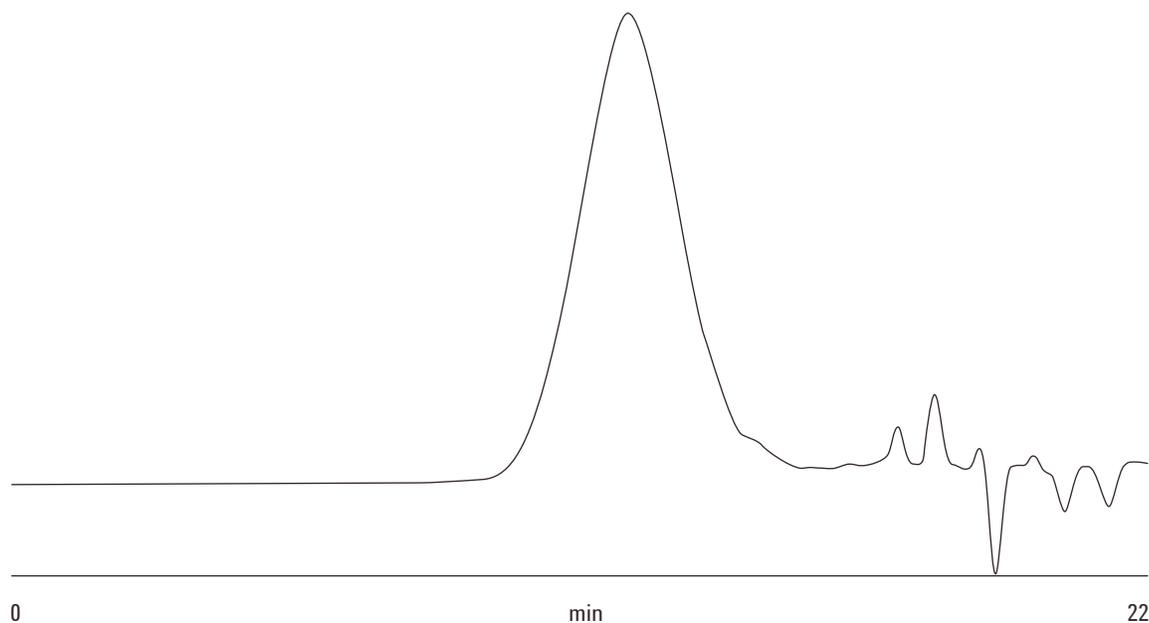


Figure 1. Individual components of an injection-molding polymer elute as a single peak, showing their similarity in molecular size.

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