

Unsaturated Polyester Resins on Agilent PLgel with Gel Permeation Chromatography

Application Note

Materials Testing and Research, Polymers

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Introduction

Unsaturated polyester resins are used extensively with glass and other reinforcements in the production of composite materials. Gel permeation chromatography of these materials is employed for product development and quality control.



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Analysis of Unsaturated Polyester Resins

The distribution of a polyester resin is shown in Figure 1, with the calculated molecular weights indicated in Table 1 and Figure 2.

Calibrants	Agilent Polystyrene
Columns	Agilent PLgel 5 μm 10 ⁴ Å, 300 × 7.5 mm (p/n PL1110-6540) Agilent PLgel 5 μm 500Å, 300 × 7.5 mm (p/n PL1110-6525)
Eluent	THF
Flow rate	1.0 mL/min
Detector	RI
System	Agilent PL-GPC 50

Table 1. Calculated Molecular Weights for a Sample of Unsaturated Polyester Resin

M _p	4,065
M _n	2,221
M _w	5,846
M _z	13,776
M _w /M _n	2.63

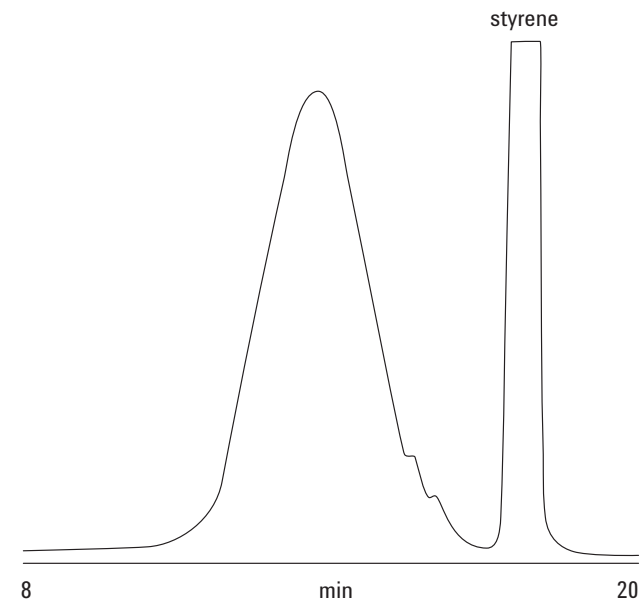


Figure 1. The distribution of an unsaturated polyester resin on Agilent PLgel 5 μm columns.

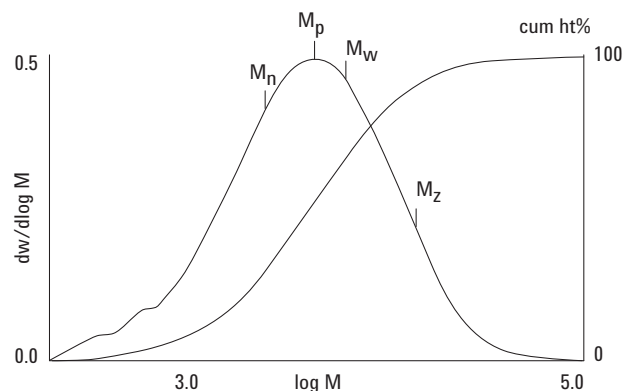


Figure 2. Molecular weights of a sample of an unsaturated polyester resin.

Conclusion

Gel permeation chromatography with Agilent PLgel columns can be used to confirm the molecular weight of polyester resins, a property that affects application in the manufacture of composite materials.

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