Waters column

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34 Maple Street
Milford, MA 01757 USA
Tel: 508-478-2000
Toll-free: 1-800-252-4752
Fax: 508-872-1990

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Rapid Polyolefin Additive Separation Using a Waters Nova-Pak® C_{18} Column

Objective:

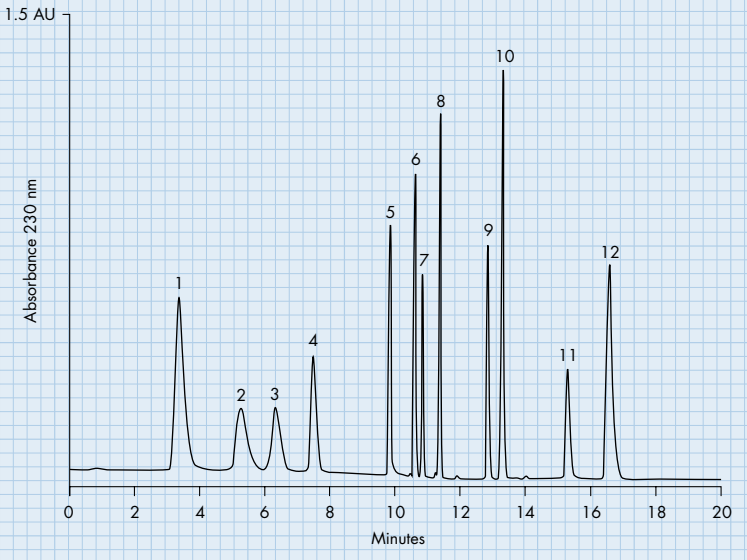
This separation demonstrates that flow programming, along with a gradient is a powerful technique for separating a large number of polymer additives in a short amount of time. This gradient does not hydrolyze the phosphite ester into multiple peaks, as evidenced by the single, symmetrical Irgafos 168 peak.

Details

See reference for microwave and ultrasonic extraction methods.

System

The system used consisted of a Waters Powerline 600 Solvent Delivery System, with the Waters 490 UV Detector, Waters 712 WISP Autosampler, and the Waters 860 ExpertEase™ Data System.



Column:		Nova-Pak® C_{18} (3.9 x 150 mm)		
Column Temparture:		50°C		
Eluent A:		Acetonitrile/Water (60:40)		
Eluent B:		Acetonitrile		
Gradient:				
Time	Flow	%A	%B	Curve
Init	0.80	100	0	*
6.00	1.50	0	100	6
10.00	1.80	0	100	6
Detection:		UV at 230nm		
Injection volume:		15 µL		

Sample Components:

1) Tinuvin P
2) Irganox MD 1024
3) BHT
4) BHEB
5) Goodrite 1330
6) Cyasorb UV 531
7) Isonox 129
8) Ferro AM 340
9) Irganox 3114
10) Irganox 1010
11) Irganox 1076
12) Irgafos 168, (phosphite ester)

Gradient HPLC with flow programming can be used to separate these 12 polyolefin additives in less than 17 minutes. The Irgafos 168 phosphite ester appears as a single peak, with no evidence of degradation.

References:

Nielson, R., "Extraction and Quantitation of Polyolefin Additives", Journal of Liquid Chromatography, Vo. 14, #3, 1991

Waters APPLICATIONS NOTES

Waters Corporation 34 Maple Street, Milford, Massachusetts 01757-3696 U.S.A. 508 478-2000