

Flash Cartridge Comparison Report with 5 Component Test Mixture

Introduction

Many Flash cartridges are now available in the market space, however which cartridge gives the best overall value is often not clear. In the comparison below this is explored using a 5 component test mixture with a wide variety of polarity indices. The cartridges utilized in the comparison are from a variety of leading Flash Cartridge suppliers and includes both the standard silica and high performance media, these are compared to the GraceResolv™ and Grace® Reveleris® Flash Chromatography cartridges.

Experimental

This comparison was carried out using a standard 5 component test mixture made up as follows:

Component	gms	mg/mL	Rf 80:20	Rf 60:40
Napthalene	5	50	0.66	0.72
1-nitronapthalene	5	50	0.4	0.60
2-nitroaniline	5	50	0.26	0.48
3-nitroaniline	5	50	0.16	0.38
4-nitroaniline	5	50	0.10	0.27

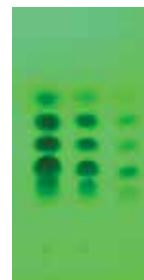
The gradient chosen was as follows:

Step	% Hexane	% Ethylacetate	Number of CV's
1	95	5	2
2	95 to 60	5 to 40	Over 10
3	60	40	3

The dry components were dissolved in 50mL acetone and then 50mL hexane added to give a total concentration of 250mg/mL for the 5 components, or 50mg/mL of each component. TLC analysis of the mixture at 50, 25 & 5µg on plate in two strengths of hexane:ethylacetate, 80:20 and 60:40 were used to optimize the gradient conditions. These TLC plates, visualized under UV254, are shown below:



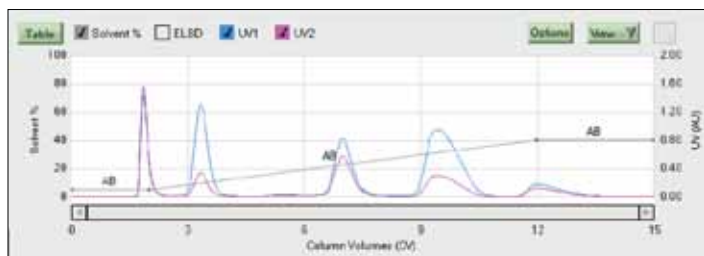
80:20 Hexane:Ethylacetate



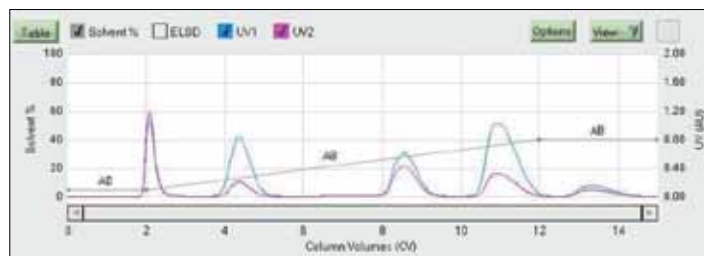
60:40 Hexane:Ethylacetate

Results

A selection of competitor's standard and premium cartridges were tested, along with GraceResolv™ and Reveleris® cartridges. A Grace® Reveleris® Flash purification system was used for the chromatography, cartridges were equilibrated with 3 Column Volumes, CV's. The sample, 0.5mL of the 250mg/mL solution, was loaded onto each cartridge. The flow rate for equilibration and separation was 36mL/min. The naphthalene was chosen to give a non-retained peak which in all cases eluted between 1 and 2 CV's. The UV detection wavelengths were set to 254 and 280nm.

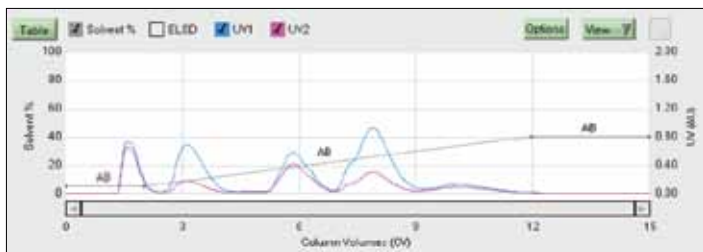


GraceResolv™ 12g cartridge 5pk aniline test mix

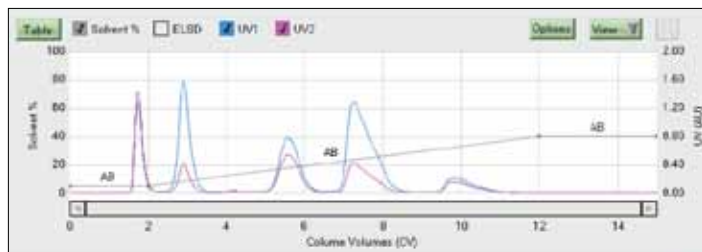


Grace® Reveleris® 12g cartridge 5pk aniline test mix

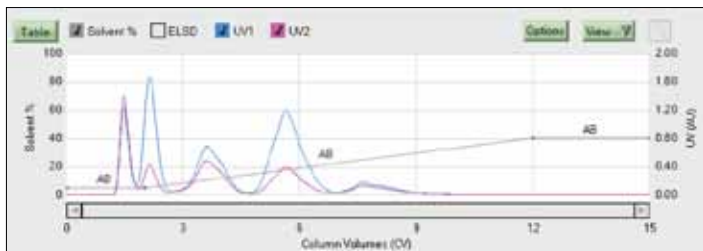




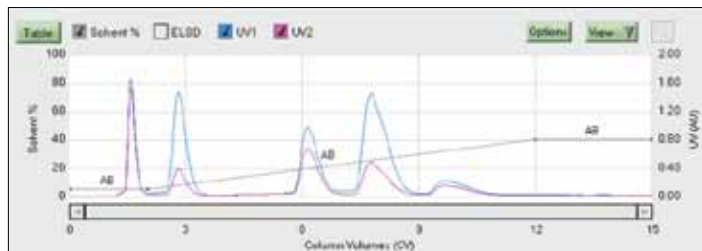
Competitor A standard cartridges 5pk aniline test mix



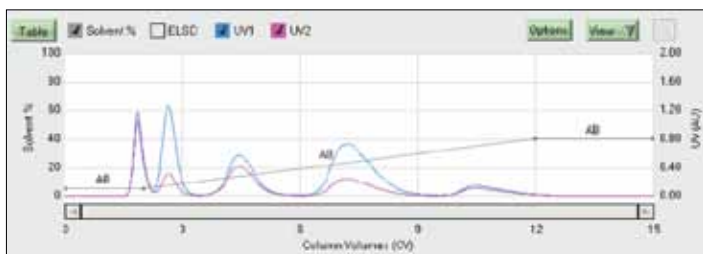
Competitor A premium cartridge 5pk aniline test mix



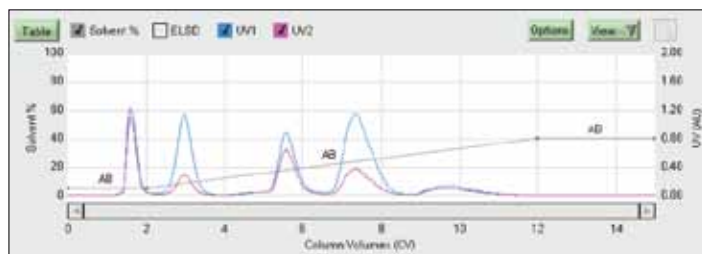
Competitor B standard cartridge 5pk aniline test mix



Competitor B premium cartridge 5pk aniline test mix



Competitor C standard cartridge 5pk aniline test mix



Competitor D standard cartridge 5pk aniline test mix

Conclusion

All cartridges performed well with baseline resolution achieved in almost all cases. The cartridges chosen were selected at random from new cases of cartridges. The Grace® cartridges clearly show the best overall resolution between all five peaks with the Reveleris® cartridge showing the best overall resolution, with peak 5 (4-nitroaniline) being retained until the isocratic 60:40 hexane:ethylacetate step. This resolution is attributed to the silica selectivity and packing techniques and will result in higher purity fractions and higher loadings, which reduces the overall cost per sample when purified on GraceResolv™ or Reveleris® cartridges.

Reveleris® Flash Cartridges

Description	Qty	Part No.	Description	Qty	Part No.
Silica (up to 200psig)			Amino (up to 200psig)		
4g Silica Cartridge	20	5146130	4g Amino Cartridge	each	5157330
12g Silica Cartridge	20	5146131	12g Amino Cartridge	each	5157331
40g Silica Cartridge	15	5146132	40g Amino Cartridge	each	5157332
80g Silica Cartridge	12	5146133	80g Amino Cartridge	each	5157333
120g Silica Cartridge	10	5146134	120g Amino Cartridge	each	5157334
330g Silica Cartridge	4	5146135	Diol (up to 200psig)		
Reverse Phase C18 (up to 200psig)			4g Diol Cartridge	each	5157335
4g C18 Cartridge	each	5152990	12g Diol Cartridge	each	5157336
12g C18 Cartridge	each	5152103	40g Diol Cartridge	each	5157337
40g C18 Cartridge	each	5152104	80g Diol Cartridge	each	5157338
80g C18 Cartridge	each	5152105	120g Diol Cartridge	each	5157339
120g C18 Cartridge	each	5152991			

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