

SiliaSep™ HP Flash Cartridges: New High Performance Separation Tools

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Introduction

Purification by flash chromatography is not always as trivial as we would like. Even if there are other available techniques that lead up to the desired separation, they are not always as efficient as we would need.

In such cases where the separation is relatively tight, preparative HPLC is probably the most common alternative to unsuccessful classical flash chromatography. Unfortunately, this technique is not accessible to everyone as it requires specific equipment and expensive consumables.

The results obtained by flash chromatography will vary according to different parameters such as the silica used and the quality of the packing. High performance SiliaSep HP flash cartridges are a new separation tool that combines consistent high quality packing as well as smaller particle size silica. The following results highlight the advantages of these pre-packed high performance flash cartridges.

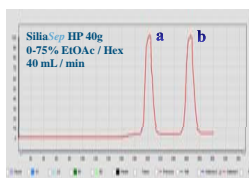
Cartridges Performance Evaluation

The performance of a flash cartridge can be measured by looking at different parameters including plate count (N) and symmetry (SI).

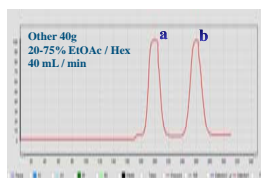
Comparison of the SiliaSep HP 40g to one of the most performant flash cartridges packed with standard 40-63µm silica gives the following:

Cartridge Parameters

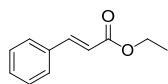
		N	h	SI
SiliaSep HP	40g	2258	1.2	1.1
Other (40-63 µm)	40g	1490	1.8	1.1



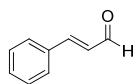
SiliaSep HP 40g



Other 40g



a) Ethyl cinnamate

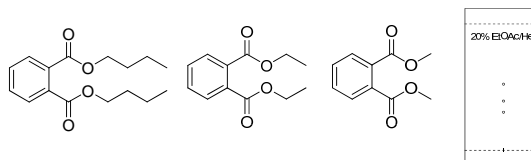


b) *trans*-cinnamaldehyde

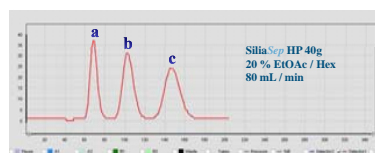
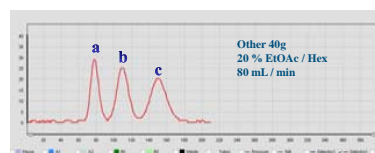
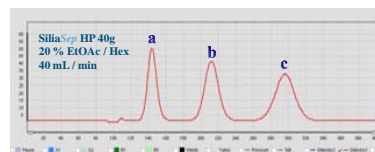
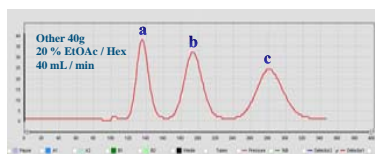
As shown in the last chromatograms, for two comparable cartridges (same formats) with different particle size silicas, the separation is greatly enhanced as the peaks are significantly sharper and the elapsed time between the two products is improved.

Time Efficient

The outstanding performance of the SiliaSep HP can be translated into a reduction of the time needed for the purification. Since the peaks are sharper and the time elapsed between the two products longer, it is possible to increase the flow rate while keeping the same good separation. As shown in the following chromatograms, although the separation of the three phthalates can be done using the same conditions with either type of cartridges, the same results can be achieved in half the time using the SiliaSep HP with still the same great efficiency.



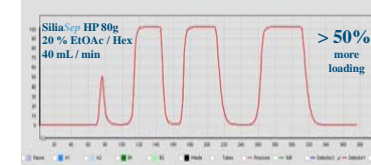
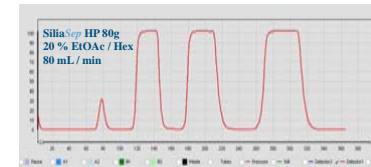
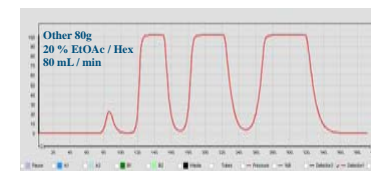
a) Dibutylphthalate b) Diethylphthalate c) Dimethylphthalate



Higher Loading

The high performance of the SiliaSep HP associated to the higher plate count can also be highlighted by looking at the loading they can hold compared to the usual 40-63 µm cartridges.

In the following chromatogram, the concentration of the analytes (phthalates) was increased to the maximum amount the other 40g cartridge can still purify efficiently. Injection of the same concentration on the SiliaSep HP clearly show its maximum concentration could be significantly higher. In fact, as presented in the last chromatogram, the SiliaSep HP can stand over 50% more product and still provide a very good separation.



Conclusion

This study clearly demonstrate the multiple advantages provided by the SiliaSep HP over the conventional 40-63 µm cartridges. Not only do they present an outstanding resolution that can be measured by the plate count, they may also be used to reduce the purification time and/or offer a better loading products/silica ratio that can be translated into savings.

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