

## SOLVENT COMPATIBILITY FOR ULTRASTYRAGEL™ COLUMNS

In the past it has been known that the various STYRAGEL® packings are affected differently by different solvents. However, an educated guess has often been necessary with some solvent/column combinations.

A project was undertaken to better understand the effects of solvents on various pore sizes of ULTRASTYRAGEL™ columns and to determine which columns can be used in some of the more common mobile phases. The table below lists the plate counts for 10<sup>3</sup>Å, 500Å and 100Å ULTRASTYRAGEL columns in various mobile phases. Two individual columns were tested in each case.

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Column	Efficiency P/ft	Tol	THF	CHCl <sub>3</sub>	Tol	DMF	Tol
10 <sup>3</sup> -A	Tangent	16,199.5	13,946	16,013	17,346	14,881.5	17,384
	5σ	18,217.5	15,032	14,740	17,349	11,246	17,262.5
10 <sup>3</sup> -B	Tangent	19,947	18,375	17,263.5	18,356.5	11,856	19,194.5
	5σ	20,671.5	18,883	14,601	17,606	9,752	17,456.5
500-A	Tangent	21,151	21,788.5	19,164	23,673.5	7,648	13,855.5
	5σ	21,829.5	22,373	14,588	21,074	5,410	9,338
500-B	Tangent	24,281	20,358	18,200	25,441	3,733.5	4,975.5
	5σ	24,330.5	21,204	18,646.5	25,438	2,187.5	4,452.5
100-A	Tangent	13,954.5	10,386	10,194	11,301	not evaluated	
	5σ	13,944.5	10,748	10,336	10,441		
100-B	Tangent	12,207	12,766.5	7,187.5	5,794.5	not evaluated	
	5σ	12,334.5	13,564	7,225	4,014		

The plate counts were done by injecting 10 µl of a 3% solution of ODCB in the mobile phase.

On changing over to chloroform, column 100-B seemed to deteriorate. The presence of a discoloration at the inlet to the column indicated that the column had a leak into the column and caused the failure. Therefore, the unexpectedly low plate count can be disregarded.

Prior to testing, the columns were individually stored in THF for 6 days, in chloroform for 73 days, and in DMF for 7 days. Due to the detrimental effects of the DMF on the 500Å columns, DMF was not used in the 100Å columns.

It appears from these results that mobile phases such as toluene, THF or CHCl<sub>3</sub> which are most commonly used on the STYRAGEL® family of columns can also be used with ULTRASTYRAGEL columns. However, it is not advisable to attempt to use DMF on 500Å or 100Å ULTRASTYRAGEL columns.

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