

Title: An apple-to-apple comparison of Luknova standard silica column with competitors for the separation of toluene, dimethyl phthalate, and diethyl phthalate in methylene chloride

Background

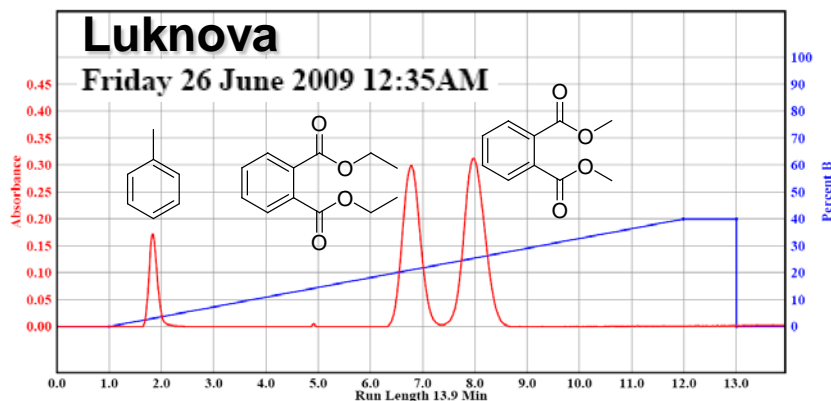
Luknova normal phase silica gel columns are designed for flash purification of organic compounds with sample loading up to 10% of packed mass. The columns are disposable and reusable. Quality silica gel with narrow particle size distribution and high purity enables significant improvement in purification efficiency, resolution, and column reproducibility. Narrow pH range prevents the compound decomposition at room temperature.

Separation efficiency and solvent consumption are two of the key factors that determine the flash column performance and purification efficiency. In this application note, Luknova standard silica column was compared with competitor's RF silica columns under the same conditions to reveal the difference in the purification performance and solvent consumption.

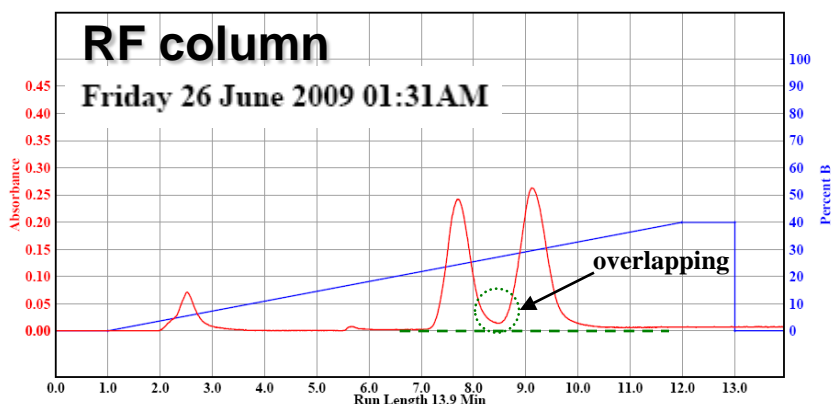
Experimental

A 40g standard flash column from Luknova and a 40g RF silica column were used. A total volume 0.6mL sample of 10.5% toluene + 13.5% diethyl phthalate + 14.5% dimethyl phthalate in methylene chloride was injected into the flash column that was wetted under the standard conditions. For experimental information in detail, please refer to Page 2-3.

Results and Discussion



Detection Wavelength (red): 254 nm
Flow Rate: 40 ml/min
Equilibration Volume: 240.0 ml
Initial Waste: 0.0 ml
Air Purge: 1.0 min
Run Length 13.9 Min
Loading Type: Liquid
Peak Detection Width: 2 min
Peak Detection Threshold: 0.20 AU
Solvent A: A1 hexane
Solvent B: B1 ethyl acetate
Run Notes:



Compared to RF column,
Luknova column offers:

- reduced 20% time.
— 9 mins against 11 mins
- saved 20% solvent.
— 9 mins against 11 mins
- signal 1.4 times (stronger).
— 0.35 against 0.25
— better resolution
- reached baseline separation

SampleName: luknova-2

Friday 26 June 2009 12:35AM

Luknova column: 40g Silica

Detection Wavelength (red): 254 nm

Flow Rate: 40 ml/min

Equilibration Volume: 240.0 ml

Initial Waste: 0.0 ml

Air Purge: 1.0 min

Run Length 13.9 Min

Peak Tube Volume: Max.

Non-Peak Tube Volume: Max.

Loading Type: Liquid

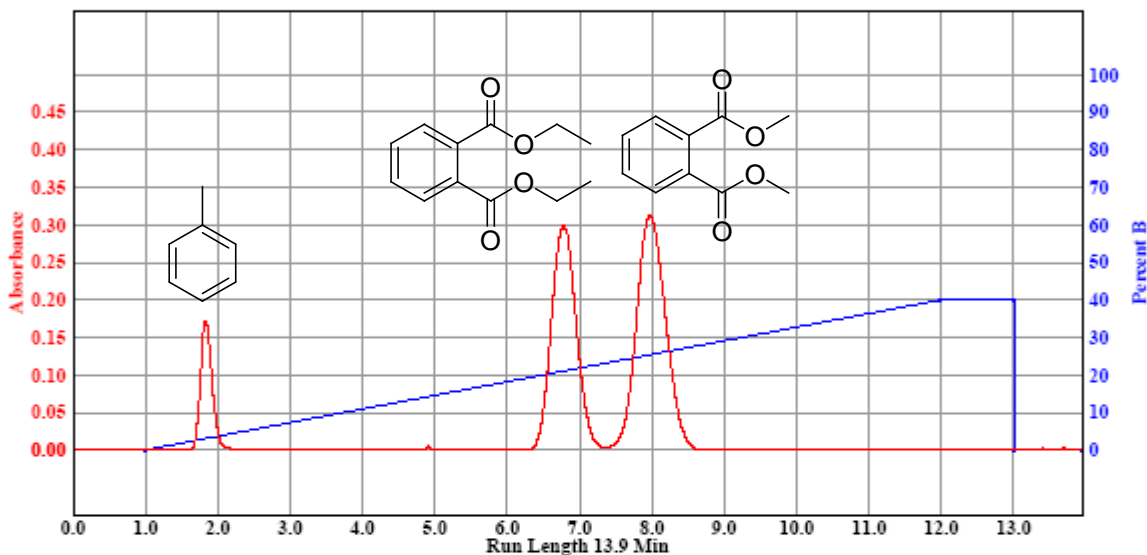
Peak Detection Width: 2 min

Peak Detection Threshold: 0.20 AU

Solvent A: A1 hexane

Solvent B: B1 ethyl acetate

Run Notes:



Rack A

71	72	73	74	75
70	69	68	67	66
61	62	63	64	65
60	59	58	57	56
51	52	53	54	55
50	49	48	47	46
41	42	43	44	45
40	39	38	37	36
31	32	33	34	35
30	29	28	27	26
21	22	23	24	25
20	19	18	17	16
11	12	13	14	15
10	9	8	7	6
1	2	3	4	5

Peak #	Start Tube	End Tube

Duration	Percent B	Solvent B
0.0	0.0	B1 ethyl acetate
1.0	0.0	B1 ethyl acetate
11.0	39.9	B1 ethyl acetate
1.0	39.9	B1 ethyl acetate
0.0	0.0	B1 ethyl acetate
0.9	0.0	B1 ethyl acetate



Standard normal phase silica flash columns

Luknova normal phase silica gel columns are designed for flash purification of organic compounds with sample loading up to 10% of packed mass. The columns are disposable and reusable. Quality silica gel with narrow particle size distribution and high purity enables significant improvement in purification efficiency, resolution, and column reproducibility. Narrow pH range prevents the compound decomposition at room temperature.

Compatible with most organic solvents and all systems
 Keep dry and room temperature
 Column pre-equilibrium is highly recommended.

Technical Specifications

Normal phase high purity silica gel
 230-400 mesh particle size
 50 µm averaged particle size
 Pore size 60 angstroms
 Pore volume 0.75 ml/g
 Surface area 500 m²/g
 pH range 6.8-7.2
 Positive testing up to 200 psia
 Polypropylene construction
 Compatible with all common solvents

Silica Column Size and Flow Selection Guide

Column size	Sample size	Flow rate (mL/min)
4g	4-400mg	15-20
12g	12mg-1.2g	20-40
25g	25mg-2.5g	25-50
40g	40mg-4g	30-60
80g	80mg-8g	40-80
120g	0.12-12 g	60-120
330g	0.33-33g	80-180
750g	0.75-75g	100-300
1500g	1.5-150g	300-500

Luknova Standard Silica flash Columns

Column Size	Catalog No.	Description
4g	FC003004	4g silica, 40/pkg.
	FC003004-0	4g silica, 480/pkg.
12g	FC003012	12g silica, 30/pkg.
	FC003012-0	12g silica, 360/pkg.
25g	FC003025	25g silica, 25/pkg.
	FC003025-0	25g silica, 300/pkg.
40g	FC003040	40g silica, 20/pkg.
	FC003040-0	40g silica, 240/pkg.
80g	FC003080	80g silica, 10/pkg.
	FC003080-0	80g silica, 80/pkg.
120g	FC003120	120g silica, 8/pkg.
	FC003120-0	120g silica, 64/pkg.
330g	FC003330	330g silica, 4/pkg.
	FC003330-0	330g silica, 32/pkg.
750g	FC003750	750g silica, 4/pkg.
1500g	FC0031500	1500g silica, 3/pkg.

Empty Solid Load Cartridges (ISCO-type)

Size	Catalog No.	Description
5g	SPE05-80	5g, empty, 80/PK.
	SPE05-960	5g, empty, 960/PK.
25g	SPE25-20	25g, empty, 20/PK.
	SPE25-240	25g, empty, 240/PK.

Prepacked Solid Load Cartridges (ISCO-type)

Size	Catalog No.	Description
1g-Silica	SPE05A1	5g, preloaded 1g silica, 80/PK.
2g-Silica	SPE05A2	5g, preloaded 2g silica, 80/PK.
5g-Silica	SPE05A5	5g, preloaded 5g silica, 80/PK.
	SPE05A5-0	5g, preloaded 5g silica, 960/PK.
10g-Silica	SPE25A10	25g, preloaded 10g silica, 20/PK.
	SPE25A10-0	25g, preloaded 10g silica, 240/PK.
20g-Silica	SPE25A20	25g, preloaded 20g silica, 20/PK.
	SPE25A20-0	25g, preloaded 20g silica, 240/PK.