

Performance Comparison – Biotage® Sfär Silica HC Duo vs. Biotage® SNAP Ultra on Isolera™



For flash purification, Biotage® Sfär Silica High Capacity Duo replaces the older Biotage® SNAP Ultra product line. The Sfär columns offer significant advantages over the SNAP Ultra range:

- » New 5 g and 200 g columns
- » All spherical 20 µm media
- » Increased pressure rating
- » CE marked
- » Fast pressure-driven equilibration when used with the Biotage® Selekt system, giving huge solvent savings
- » New improved packaging
- » Clearer labels and QR code when used with the Selekt system

The majority of these advantages are new features that can be of benefit regardless of which flash purification instrument is used to run the column. However, the main performance advantage of increased pressure capability (and associated higher flow equilibration) requires the use of the Biotage® Selekt flash purification system. So are there any performance advantages of the new columns that are of benefit to Isolera users?

To investigate this, the separation of three phthalates was investigated on the Sfär Silica High Capacity Duo 25 g and equivalent SNAP Ultra columns on the Isolera system.

Chromatography Conditions

Sample Solution (for gradient runs)

- » Dimethyl phthalate 10.0 g
- » Diethyl phthalate 10.0 g
- » Dibutyl phthalate 10.0 g
- » n-Heptane, pa 60 mL
- » Ethyl acetate, pa 10 mL

4.0 mL sample was concentrated on rotavapor and the remains were dried under vacuum for 2 hours.

m= 1.36 g which gives a concentration of 0.341 g/mL

Chromatography Gradient

- » Solvent A: n-Heptane, Solvent B: Ethyl acetate
- » Cartridge equilibration, SNAP Ultra Gradient 15% B, 5 CV
- » Cartridge equilibration, Sfär Silica HC D Gradient 15% B, 5 CV
- » Gradient run: 15% B 1 CV, 15–50% B 4 CV, 50% B 1 CV
- » 254 nm (Monitor), 280 nm (Monitor), λ-All (Collect), Baseline Correction: ON, TH: 100 mAU
- » Flow-rate, SNAP Ultra, 25 g: 75 mL/min
- » Flow-rate, Sfär Silica HC D, 25 g: 80 mL/min
- » Isolera™ One, Spektra 200–400 nm sw 3.3.0

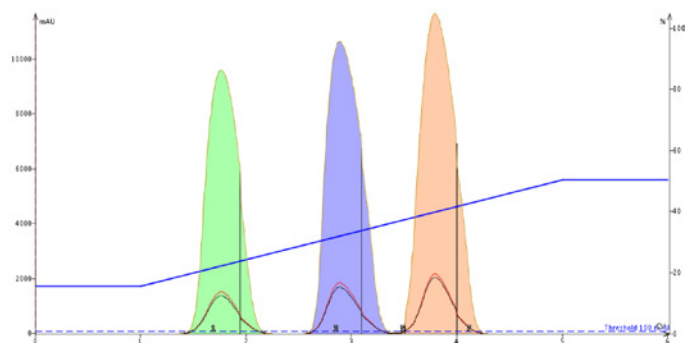


Figure 1. Separation of the three phthalates on a Biotage® SNAP Ultra 25 g column, maximum loading before resolution loss.

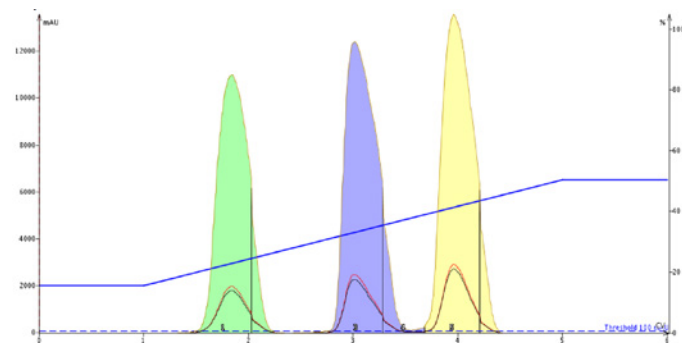


Figure 2. Separation of the three phthalates on a Biotage® Sfär Silica HC D 25 g column, maximum loading before resolution loss.

Chromatogram	Cartridge Type	Sample Volume	Sample Mass	Loading (%)
Figure 1	Biotage® SNAP Ultra, 25 g	3.6 mL	1.25 g	5
Figure 2	Biotage® Sfär Silica HC D, 25 g	4.3 mL	1.50 g	6

Table 1. Results of the experiment.

During the experiment, the loading was increased on the columns until a loss of baseline separation between the three samples was beginning to be observed.

The results obtained are shown in Figures 1 and 2 and summarized in Table 1.

Conclusions

The separation of an 3-component Phthalate sample has been optimized on Isolera™ One using a Biotage® SNAP Ultra 25 g cartridge, and the maximum loading was, maintaining baseline separation, shown to be 5% (1.25 g) material.

When same loading was applied on a 25 g Biotage® Sfär Silica HC D cartridge on Isolera, better separation was obtained due to the smaller particle size and the loading could be increased to 6% (1.6 g), even though the flowrate is 80 mL/min on 25 g Sfär Silica HC D cartridge compared to 75 mL/min running a 25 g SNAP Ultra. So for this separation, the Sfär Silica HC D gave a 20% increase in loading compared to SNAP Ultra.

This study shows that the new Sfär Silica HC D gives a significant performance improvement over the older SNAP Ultra equivalent columns, which coupled with the other advantages of the new columns result in a significant benefit to the user.

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