

# Higher Resolution Results with RediSep Gold® Silica Columns

Flash chromatography purification using smaller, spherical particles

Chromatography Application Note  
AN70

## Abstract

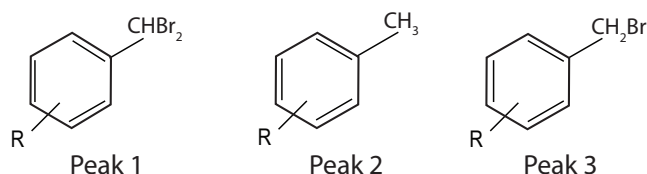
The RediSep Gold silica columns provide organic chemists with more resolution capability in their Flash chromatography purification. Through smaller particle sizes, compounds unresolved using classic Flash grade silica (40–60  $\mu\text{m}$ , 60Å) are easily purified.

RediSep Gold silica columns are distinguished in the market by an exclusive smaller, spherical particle (20–40  $\mu\text{m}$ ) that enhances resolution while minimizing back pressure. Proprietary end user purifications are used as examples.

## Results and Discussion

### Example 1: Enhanced Resolution – RediSep Silica vs. RediSep Gold Silica

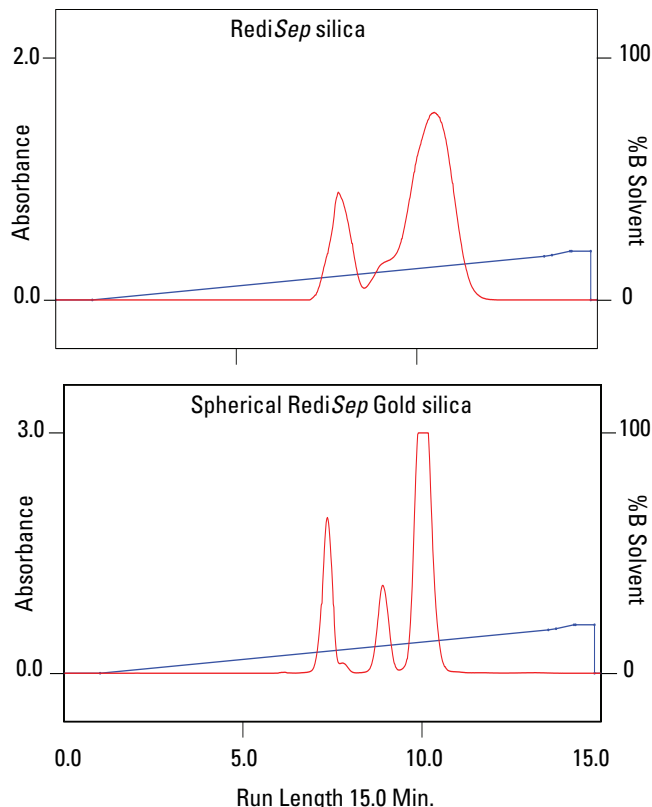
The separation of various  $\alpha$ -substituted bromotoluenes, purified on a CombiFlash® system, is compared in Figure 1, courtesy of an end user. All run conditions were constant for both columns.



**Table 1: Run Conditions for Example 1**

Column size:	40 g
Load:	500 mg (on 5 g cartridge)
Solvents:	Hexane and Ethyl Acetate
Gradient:	0-20%
Flow rate:	40 ml/min
Run time:	15 min.
Wavelength:	254 nm

The RediSep Gold columns provided baseline resolution of all three compounds. The  $\Delta R_f$  between any two adjacent compounds was 0.08. Purification of 3 distinct compounds was obtained on the RediSep Gold silica column.



**Figure 1: CombiFlash system chromatogram of 500 mg purification of various bromotoluenes using a regular RediSep silica column (top) and a RediSep Gold silica column (bottom)**

### Example 2: High Resolution with Low Back Pressure on RediSep Gold Silica

A comparison between the purification on a CombiFlash system using a standard RediSep silica column, the new RediSep Gold silica packed column, and an alternative smaller particle size with irregular media, is shown in Figure 2, courtesy of an end user. All run conditions were constant for both columns.

The standard RediSep silica and RediSep Gold silica columns both ran at a relatively low back pressure (17 psi). The RediSep Gold achieved purification of the desired compound, where the standard RediSep did not resolve the intermediate and desired compound.

The spherical silica media in the RediSep Gold columns provide a better separation at lower back pressures than a column packed with irregular silica. The higher back pressure of irregular media would also limit the flow rate range available on lower pressure

Flash chromatography systems, reduce the resolving capability of the column, and increase the purification time.

RediSep Gold silica columns are able to purify compounds with better resolution at much lower back pressure, with no increase in purification time, than any other option in Flash chromatography columns.

**Table 2: Run Conditions for Example 2**

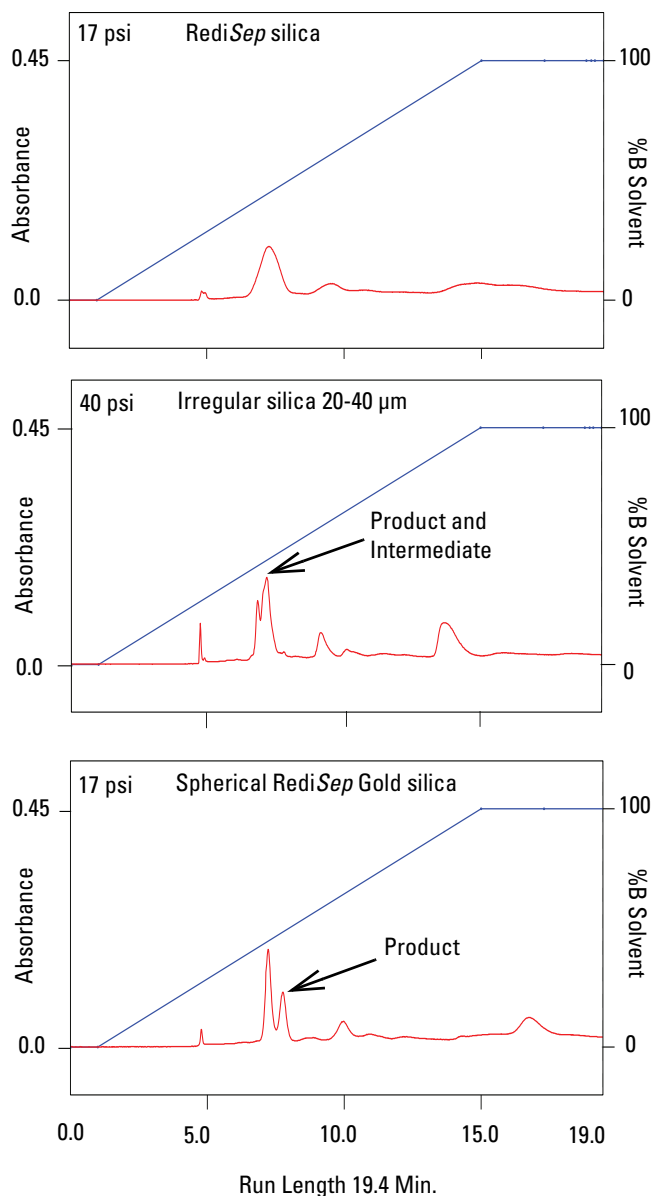
Column size	40 g
Load	333 mg (on 5 g cartridge)
Solvents	Hexane and Ethyl Acetate
Gradient	0–100%
Flow rate	40 mL/min.
Run time	19.4 min.
Wavelength	254 nm

## Conclusion

RediSep Gold columns, packed with smaller, spherical particles, provide higher resolution than conventional Flash columns without the higher back pressure of irregular material. The columns also allow purification of very difficult compounds ( $\Delta R_f < 0.1$ ) with no change in method parameters. The reduced back pressure allows these columns to be used on all models of Flash chromatography systems.

**Table 3: RediSep Gold Silica Columns**

Part Number	Description
69-2203-344	RediSep Gold Silica Disposable column, 4 gram, pkg. of 14
69-2203-345	RediSep Gold Silica Disposable column, 12 gram, pkg. of 14
69-2203-346	RediSep Gold Silica Disposable column, 24 gram, pkg. of 10
69-2203-347	RediSep Gold Silica Disposable column, 40 gram, pkg. of 10
69-2203-348	RediSep Gold Silica Disposable column, 80 gram, pkg. of 6
69-2203-349	RediSep Gold Silica Disposable column, 120 gram, pkg. of 6
69-2203-359	RediSep Gold Silica Disposable column, 220 gram pkg. of 4
69-2203-369	RediSep Gold Silica Disposable column, 330 gram, pkg. of 3
69-2203-427	RediSep Gold Silica Disposable column, 750 gram, pkg. of 3
69-2203-428	RediSep Gold Silica Disposable column, 1.5 kg, pkg. of 2
69-2203-529	RediSep Gold Silica Disposable column, 3.0 kg, pkg. of 1
69-2203-921	RediSep Gold Silica Disposable column, 7.0 kg, pkg. of 1



**Figure 2: CombiFlash system chromatogram of 40 g column** using a regular RediSep column (top), irregular silica (middle), and RediSep Gold spherical column (bottom)

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