



# Flash Chromatography Cartridges and accessories

Using Merck silica

**Product range 2008**



Cartridges available in many sizes  
from 2,5g to 800g and more



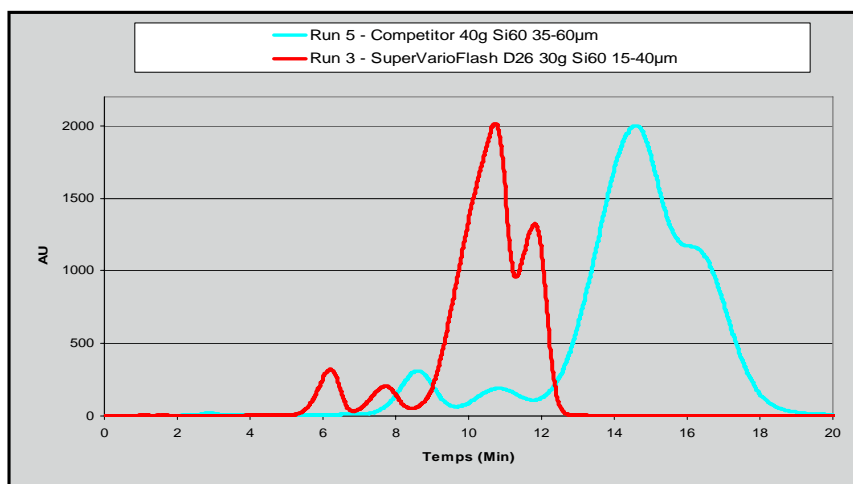
# Flash Chromatography Brochure 2007

## CONTENTS

*References, descriptions, technical information...*

	<b>A guide to sorbent selection</b>	<b>Page 4</b>
	<b>Normal phase Si60 cartridges</b>	<b>Pages 5-11</b>
	<i>MiniVarioFlash® D12</i> <i>2,5g Si60</i>	<i>Page 5</i>
	<i>SuperVarioFlash® D22</i> <i>10g - 15g Si60</i>	<i>Page 6</i>
	<i>SuperVarioFlash® D26</i> <i>25g - 30g Si60</i>	<i>Page 7</i>
	<i>SuperVarioPrep® D40</i> <i>70g - 90g - 180g - 200g Si60</i>	<i>Page 8</i>
	<i>EasyVarioPrep® D57</i> <i>150g - 200g - 300g - 350g - 400g - 600g Si60</i>	<i>Page 9</i>
	<i>SuperVarioPrep® D57</i> <i>400g Si60</i>	
	<i>EasyVarioPrep® D75</i> <i>600g - 800g Si60</i>	<i>Page 10</i>
	<i>EasyVarioPrep® D90</i> <i>800g - 1200g Si60</i>	<i>Page 11</i>
	<b>Aluminium oxide cartridges (acidic, neutral, basic)</b>	<b>Pages 12-13</b>
	<b>Grafted cartridges (RP18, CN, NH2, Diol)</b>	<b>Pages 14-16</b>
	<b>ISCO® Companion® systems specific cartridges</b>	<b>Page 17</b>
	<b>UpChurch® fittings for Flash Chromatography</b>	<b>Page 18</b>
	<b>ARMEN Instrument Spot® system</b>	<b>Page 19</b>
	<b>Dry loading</b>	<b>Page 20</b>
	<b>TLC / Flash transposition</b>	<b>Pages 21-22</b>
	<b>Technical Data of the cartridges (dimensions, loadability, flow rate,...)</b>	<b>Page 23</b>

# See the difference, run after run !!!



Thanks to the use of Merck's silica, innovative materials, and to the patented packing technology, our cartridges offer following advantages :

- Excellent TLC / Flash transposition*
- Enhanced purification resolution*
- High loading capacity*
- Easy on-column dry loading deposit*
- Fast separations*
- Trouble-free use*
- And more, to discover by yourself...*



# A guide to sorbent selection

## Performing a successful purification is a complex alchemy...

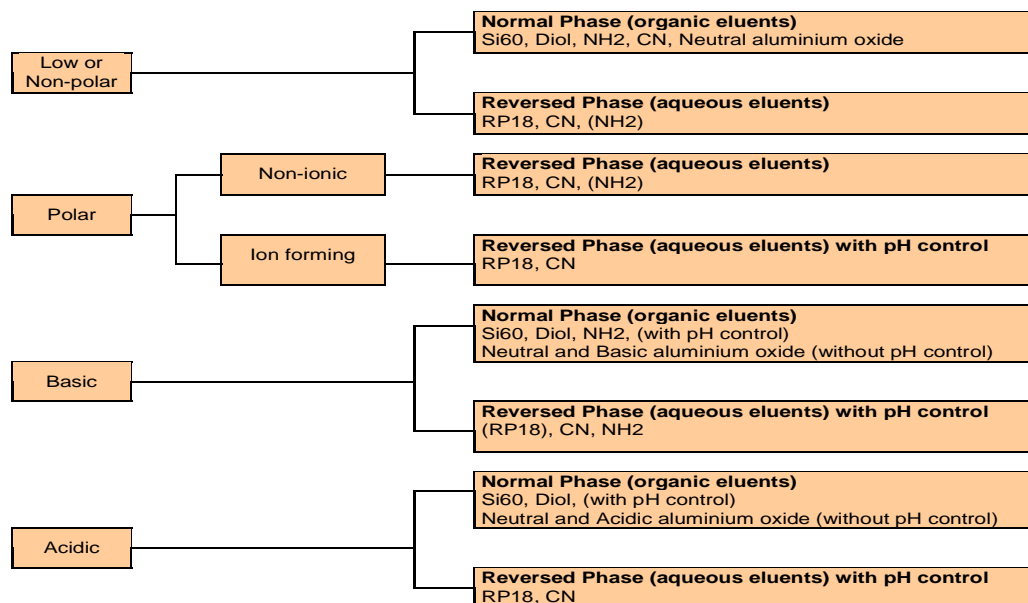
Following conditions should be simultaneously obtained, in an "ideal" case :

- Good selectivities between the compounds (sufficient differences in the retention times)
- Interesting elution order (in order to avoid overlapping of the main product and the impurities)
- Short total run time
- High solubility of the compounds in the eluents (limited fractions volume, easy injection on the cartridge)
- High capacity of the sorbent for the compounds (limited fractions volume, better purity)
- Solvents easy to evaporate
- Non (or low) toxic solvents
- Low solvents costs
- Etc...

Si60 silica offers a good basis for low-polarity compounds, as does RP18 for very polar ones.

Now, the use of intermediate sorbents can open the door to more interesting eluents (regarding solubility, evaporation, selectivity,...). These sorbents are Diol, NH2, CN, and the aluminium oxides (acidic, neutral, basic).

Here is a guide giving some recommendations for sorbent screening :



## Cleaning procedures for silica-based sorbents (Normal and modified phases)

Sorbents used in Normal phase (Si60, Diol, NH2, CN)	Sorbents used in Reversed phase (RP18, CN, NH2)
Heptane	Water
Chloroform	Methanol
Ethyl Acetate	Choloroform
Ethanol	Methanol
Water	Water
and reverse cycle back to Heptane	

Rinse the cartridge with the solvents of the table, in the mentioned order.

Volume of each solvent to be flushed through the cartridge : the same (in ml) than its silica weight.

Ex : 30 ml of each for a SuperVarioFlash 30g, 400 ml of each for an EasyVarioPrep 400g.

NB : At the end of the cleaning, please allow sufficient conditioning time before injecting the sample.

# MINIVARIOFLASH®

CHROMATOGRAPHY SYSTEMS

**MVF D12**  
**Ø 12 mm**




Loading : 20 mg to 100 mg of sample  
Flow rate : 5-10 ml/mn (depending of the solvent used)  
**New adjustable patented piston - 1/4 turn connection**





- Syringes Ø 12 mm in Polypropylene stable up to 3 bar
- 1/4 turn piston technology : very quick to fix and remove
- Piston connection is 1/4"-28
- Luer-Lock outlet
- Axial compression of silica : no dead-volumes

**These cartridges enable effective purification of small quantities of sample, or determination of the purification's conditions to be applied to cartridges of bigger sizes.**

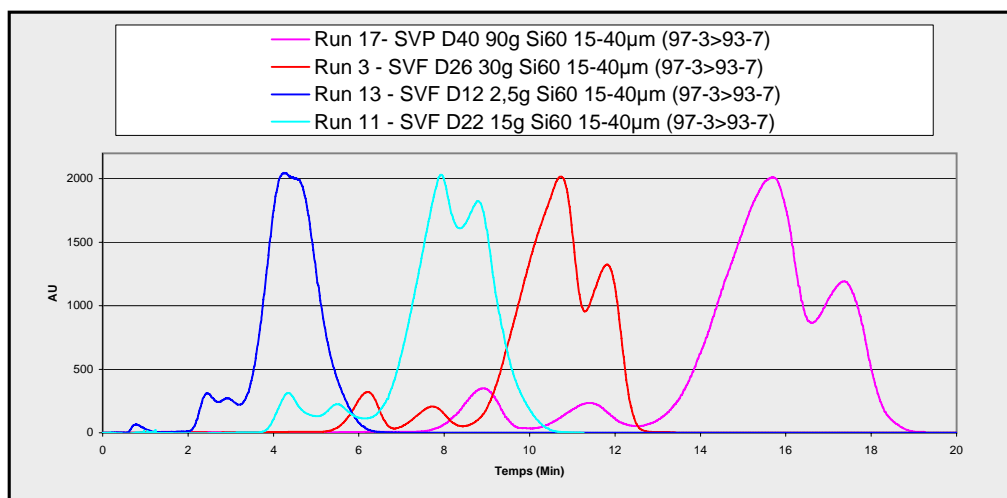
## MiniVarioFlash® D12 cartridges - Silica Si60

Weight of silica	Picture	Type of silica	Granulometry	Description	Qty by pack	Reference
2,5 g		Si60	15-40 µm irregular	2,5g D12 - Si60 15-40 µm	20	GL012 15111 2

## Accessories for MiniVarioFlash® D12

Picture	Description	Qty by pack	Reference
	1/4 turn adjustable piston for MVF D12 - 1/4"-28 connection	1	GP012 B1428
	"Dry loading" Kit : Filters + frits for SVF D12	25	GFV012 00025
	Viton® O-ring for SVF D12	20	GOP012 20
	EMPTY cartridges for SVF D12 with o-rings, frits and filters	20	GE012 000

## Use of MiniVarioFlash® for Flash / Flash upscaling



Injection of the same product / silica loading on 4 different cartridges sizes

**In a question of minutes, the MiniVarioFlash® enables to validate the purification conditions that you plan to use. Transposability is excellent, as all of our cartridges use the same silica, packed in the same conditions. During purifications of great amount of sample, this step allows you to inject in complete confidence !**

**SVF D22**  
**Ø 22 mm**





## SUPERVARIOfLASH®

CHROMATOGRAPHY SYSTEMS

Loading : 100 mg to 700 mg of sample  
Flow rate : 10-20 ml/mn (depending of the solvent used)  
**New adjustable patented piston - 1/4 turn connection**

- Syringes Ø 22 mm in Polypropylene stable up to 3 bar
- 1/4 turn piston technology : very quick to fix and remove
- Piston connection is 1/4"-28
- Luer-Lock outlet
- Axial compression of silica : no dead-volumes
- Cartridges of 10 g and 15 g can be used with dry loading





### SuperVarioFlash® D22 cartridges - Silica Si60

Weight of silica	Picture	Type of silica	Granulometry	Description	Qty by pack	Reference
10 g		Si60	25-40 µm spherical	10g D22 - Pharmprep 25-40 µm	20	GL022 09371 10
			15-40 µm irregular	<b>10g D22 - Si60 15-40 µm</b>	<b>20</b>	<b>GL022 15111 10</b>
15 g		Si60	25-40 µm spherical	15g D22 - Pharmprep 25-40 µm	20	GL022 09371 15
			15-40 µm irregular	<b>15g D22 - Si60 15-40 µm</b>	<b>20</b>	<b>GL022 15111 15</b>

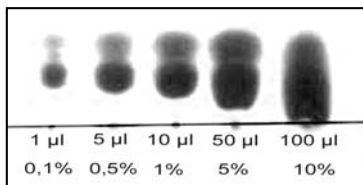
These cartridges can be used with a dry loading. Accessory GFV02200025 (filters + frits) has then to be ordered in addition.

Dry loading capacity is 8g of silica for the 10g cartridges, and 3g of silica for the 15g cartridges.

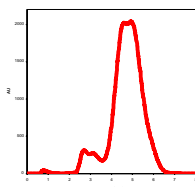
### Accessories for SuperVarioFlash® D22

Picture	Description	Qty by pack	Reference
	1/4 turn adjustable piston for SVF D22 - 1/4"-28 connection	1	GP022 B1428
	"Dry loading" Kit : Filters + frits for SVF D22	25	GFV022 00025
	Viton® O-ring for SVF D22	20	GOP022 20
	EMPTY cartridges for SVF D22 with o-rings, frits and filters	20	GE022 000

### Comparison of resolution for different sizes of cartridges

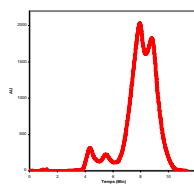


TLC : Volume + loading in % of silica weight



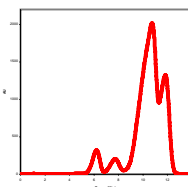
MiniVarioFlash®  
2,5 g Si60 15-40 µm

**0,17 ml 17 mg**



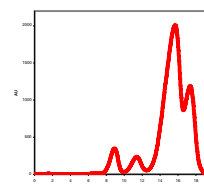
SuperVarioFlash®  
15 g Si60 15-40 µm

**1,0 ml 100 mg**



SuperVarioFlash®  
30 g Si60 15-40 µm

**2,0 ml 200 mg**



SuperVarioPrep®  
90 g Si60 15-40 µm

**6,0 ml 600 mg**

Chromatograms obtained  
with **0,7 % mass loading**

*NB : Loading capacity depends of the sample characteristics, and of the purity wanted. It is comprised between 0,5% and 5-10%.*

**SVF D26**  
**Ø 26 mm**



## SUPERVARIOFLASH®

CHROMATOGRAPHY SYSTEMS

Loading : 200 mg to 1,5 g of sample  
Flow rate : 10-30 ml/mn (depending of the solvent used)  
New adjustable patented piston - 1/4 turn connection

- Syringes Ø 26 mm in Polypropylene stable up to 3 bar
- 1/4 turn piston technology : very quick to fix and remove
- Piston connection is 1/4"-28
- Luer-Lock outlet
- Axial compression of silica : no dead-volumes
- Cartridges of 25 g can be used with dry loading



Empty cartridges enable also to prepare pre-columns for dry loading.

## SuperVarioFlash® D26 cartridges- Silica Si60

Weight of silica	Picture	Type of silica	Granulometry	Description	Qty by pack	Reference
25 g		Si60	25-40 µm spherical	25g D26 - Pharmprep 25-40 µm	20	GK026 09371 25
			15-40 µm irregular	<b>25g D26 - Si60 15-40 µm</b>	<b>20</b>	<b>GL026 26</b>
			40-63 µm irregular	25g D26 - Si60 40-63 µm	20	GL026 25
These 25g cartridges are designed for on-column dry loading, and are therefore delivered with the needed additional filters and frits. Dry loading capacity is 5g of silica.						
30 g		Si60	25-40 µm spherical	30g D26 - Pharmprep 25-40 µm	20	GK026 09371 30
			15-40 µm irregular	<b>30g D26 - Si60 15-40 µm</b>	<b>20</b>	<b>GL026 36</b>
			40-63 µm irregular	30g D26 - Si60 40-63 µm	20	GL026 30

## Accessories for SuperVarioFlash® D26

Picture	Description	Qty by pack	Reference
	1/4 turn adjustable piston for SVF D26 - 1/4"-28 connection	1	GP026 B1428
	Kit for on-column dry loading : filters + frits for SVF D26	25	GFV026 00025
	Viton® o-ring seals for SVF D26	20	GOP026 20
	EMPTY cartridges SVF D26 with seals, frits and filters	25	GE026 00025

### Dry loading on top of pre-packed cartridges, made simple...



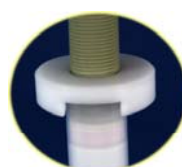
Sample introduction



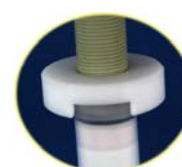
Filter (fine) insertion



Frit (thick) insertion



Piston is used to position the filter and frit.



O-ring seal is added and the piston is screwed

**SVP D40**  
**Ø 40 mm**



## SUPERVARIOPREP® CHROMATOGRAPHY SYSTEMS

Loading : 700 mg to 10 g of sample  
Flow rate : 30-80 ml/mn (depending of the solvent used)  
Same pistons for all D40 cartridges

- Cartridges Ø 40 mm in Polypropylene stable up to 6 bar
- Easy-to-use pistons, with high sealing efficiency
- Piston connection is 1/4"-28
- Luer-Lock outlet
- Axial compression of silica : no dead-volumes
- Cartridges of 70g, 90g and 180g can be used with dry loading



The adjustable pistons offer easy handling, and increase the sealing when using "on-column" dry loading.

### SuperVarioPrep® D40 cartridges - Silica Si60

Weight of silica	Picture	Type of silica	Granulometry	Description	Qty by pack	Reference
70 g		Si60	25-40 µm spherical	70g D40 - Pharmprep 25-40 µm	12	GK040 09371 70
			15-40 µm irregular	<b>70g D40 - Si60 15-40 µm</b>	<b>12</b>	<b>GK040 75</b>
			40-63 µm irregular	70g D40 - Si60 40-63 µm	12	GK040 70
90 g		Si60	25-40 µm spherical	90g D40 - Pharmprep 25-40 µm	12	GK040 09371 90
			15-40 µm irregular	<b>90g D40 - Si60 15-40 µm</b>	<b>12</b>	<b>GK040 95</b>
			40-63 µm irregular	90g D40 - Si60 40-63 µm	12	GK040 90
These 70g and 90g cartridges can be used with 10-15g of on-column dry loading. Accessory GFVP04020 (filters and frits) has then to be ordered in addition.						
180 g		Si60	15-40 µm irregular	<b>180g D40 - Si60 15-40 µm</b> <b>For dry loading, with frits</b>	4	<b>GK040 221</b>
In order to use these 180g cartridges WITHOUT dry loading, an adjustable piston GPVL0401428 is needed.						
200 g		Si60	25-40 µm spherical	200g D40 - Pharmprep 25-40 µm	4	GK040 0937 200
			15-40 µm irregular	<b>200g D40 - Si60 15-40 µm</b>	<b>4</b>	<b>GK040 220</b>
			40-63 µm irregular	200g D40 - Si60 40-63 µm	4	GK040 225

### Accessories for SuperVarioPrep® D40

Picture	Description	Qty by pack	Reference
	Adjustable piston for SVP D40 - 1/4"-28 connection	1	GPVL040 1428
	Piston PP for SVP D40 - 1/4"-28 connection	1	GPI042 1428
	Kit for on-column dry loading : filters + frits for SVP D40	20	GFVP040 20
	Viton® o-ring seals for SVP D40	20	GOP040
	EMPTY cartridges SVP D40 with seals, frits and filters Capacity = 0 to 90 g of silica or dry loading	20	GE041
	EMPTY cartridges SVP D40 with seals, frits and filters Capacity = 120 to 200 g of silica or dry loading	5	GE042



*The Merck silica, aluminium oxides, LiChroprep, ..., packed in the cartridges presented in this brochure are also available in bulk, to pack your own columns.*

*Contact us if you are interested !*

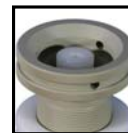
**EVP D57**  
**Ø 57 mm**



Loading : 2 g to 30 g of sample  
Flow rate : 50-200 ml/mn (depending of the solvent used)  
**EasyVarioPrep® : No pistons are needed : Ready to connect !**  
**SuperVarioPrep® : Adjustable pistons are needed**

- Cartridges Ø 57 mm in Polypropylene or PVDF stable up to 16 bar
- Piston or cartridge connection is 1/4"-28
- Axial compression of silica : no dead-volumes
- 350g EasyVarioPrep cartridges can be used with dry loading

**Thanks to our patented packing technology, the silica bed does not collapse during the purification.**  
**These cartridges can therefore be reused many times !**



## EasyVarioPrep® D57 cartridges - Silica Si60

Weight of silica	Picture	Type of silica	Granulometry	Description	Qty by pack	Reference
150 g		Si60	15-40 µm irregular	150g D57 - Si60 15-40 µm	3	GY057 150 15111
			40-63 µm irregular	150g D57 - Si60 40-63 µm	3	GY057 150 9385
200 g		Si60	15-40 µm irregular	200g D57 - Si60 15-40 µm	3	GY057 200 15111
			40-63 µm irregular	200g D57 - Si60 40-63 µm	3	GY057 200 9385
300 g		Si60	15-40 µm irregular	300g D57 - Si60 15-40 µm	2	GY057 300 15111
			40-63 µm irregular	300g D57 - Si60 40-63 µm	2	GY057 300 9385
400 g		Si60	15-40 µm irregular	400g D57 - Si60 15-40 µm	2	GY057 400 15111
			40-63 µm irregular	400g D57 - Si60 40-63 µm	2	GY057 400 9385
600 g		Si60	15-40 µm irregular	600g D57 - Si60 15-40 µm	2	GY057 600 15111
			40-63 µm irregular	600g D57 - Si60 40-63 µm	2	GY057 600 9385

All of these EasyVarioPrep cartridges do not need any piston : connect directly your tubing fitted with a 1/4"-28 nut.

## SuperVarioPrep® D57 cartridges - Silica Si60

Weight of silica	Picture	Type of silica	Granulometry	Description	Qty by pack	Reference	Price €HT
350 g		Si60	15-40 µm irregular	350g D57 - Si60 15-40 µm	2	GKY057 350 15111	
			40-63 µm irregular	350g D57 - Si60 40-63 µm	2	GKY057 350 9385	
NB : This 350g cartridge is designed for on-column dry loading (0-45g of silica), and therefore needs to use one adjustable piston GPI0571428							
400 g		Si60	15-40 µm irregular	400g D57 - Si60 15-40 µm	2	GK057 400 15111	
			40-63 µm irregular	400g D57 - Si60 40-63 µm	2	GK057 400 9385	
NB : This 400g cartridges needs to use 2 adjustable pistons GPI0571428							

The use of optional tools GHK057 helps to screw and unscrew more easily the pistons.

## Accessories for SuperVarioPrep® D57

Picture	Description	Qty by pack	Reference
	Adjustable piston for SVP D57 - 1/4"-28 connection	1	GPI057 1428
	Tools for SVP D57 - For easy screwing and unscrewing of the piston	2	GHK057
	Kit for on-column dry loading : filters + frits for SVP D57	20	GFVP057 20
	Viton® o-ring seals for SVP D57	20	GOP057 20
	EMPTY cartridges SVP D57 in PVDF for dry loading (0-150g of silica). Need the use of 2 pistons GPI0571428.	2	GE057P150
	EMPTY cartridges SVP D57 in PVDF for 300g of silica. Need the use of 2 pistons GPI0571428.	2	GE057P300
	EMPTY cartridges SVP D57 in PVDF for 400g of silica. Need the use of 2 pistons GPI0571428.	2	GE057P
	EMPTY cartridges SVP D57 in PVDF for 600g of silica. Need the use of 2 pistons GPI0571428.	2	GE057P600

**EVP D75**  
**Ø 75 mm**



## EASYVARIOPREP®

CHROMATOGRAPHY SYSTEMS

Loading : 6 g to 40 g of sample  
Flow rate : 80-350 ml/mn (depending of the solvent used)

**EasyVarioPrep® : No pistons are needed : Ready to connect !**

- Cartridges Ø 75 mm in Polypropylene stable up to 6 bar
- Cartridge connection is 1/4"-28
- Axial compression of silica : no dead-volumes
- Column can be held vertically with the help of optional reusable support

**Thanks to our patented packing technology, the silica bed does not collapse during the purification.**

### EasyVarioPrep® D75 cartridges - Silica Si60

Weight of silica	Picture	Type of silica	Granulometry	Description	Qty by pack	Reference
600 g		Si60	40-63 µm irregular	600g D75 - Si60 40-63 µm	2	GY075 600 9385
800 g		Si60	40-63 µm irregular	800g D75 - Si60 40-63 µm	2	GY075 800 9385

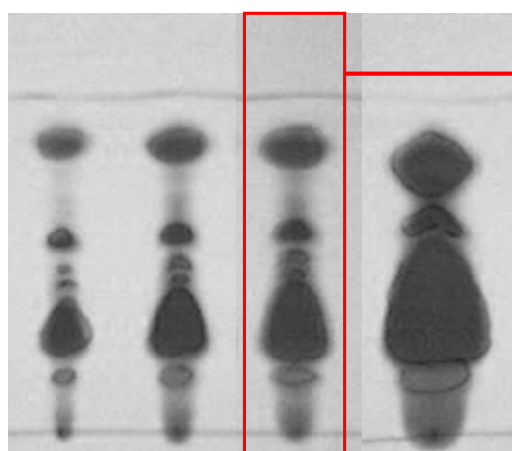
These EasyVarioPrep cartridges do not need any piston : connect directly your tubing fitted with a 1/4"-28 nut.

### Accessories for EasyVarioPrep® D75

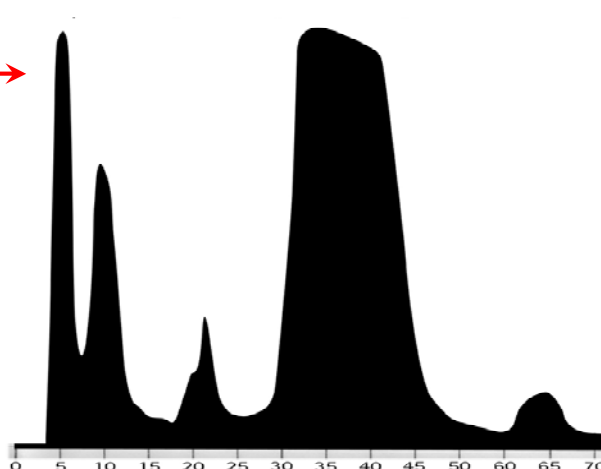
Picture	Description	Qty by pack	Reference
	Reusable support for EasyVarioPrep D75. Enable to maintain the cartridge in vertical position.	1	GS075

### TLC / Flash transposition on an EasyVarioPrep® D75 800g

Cyclohexane / Ethyl acetate 80/20 - Flash flow rate = 150 ml/mn - 25g injected on the EVP 800g (3% of silica weight)



Loading : 1%    2%    3%    5%



**Direct transposition of TLC eluent conditions and selected loading (3%) gave a successful purification of 25g on the EVP Si60 800g !**

**EVP D90**  
**Ø 90 mm**



## EASYVARIOPREP®

CHROMATOGRAPHY SYSTEMS

Loading : 8 g to 120 g of sample  
Flow rate : 100-500 ml/mn (depending of the solvent used)

**EasyVarioPrep® : No pistons are needed : Ready to connect !**

- Cartridges Ø 90 mm in Polypropylene stable up to 6 bar
- Cartridge connection is 1/4"-28
- Axial compression of silica : no dead-volumes
- Column can be held vertically with the help of optional reusable support

**Thanks to our patented packing technology, the silica bed does not collapse during the purification.**

### EasyVarioPrep® D90 cartridges - Silica Si60

Weight of silica	Picture	Type of silica	Granulometry	Description	Qty by pack	Reference
800 g		Si60	40-63 µm irregular	800g D90 - Si60 40-63 µm	2	GY090 800 9385
1200 g		Si60	40-63 µm irregular	1200g D90 - Si60 40-63 µm	1	GY090 1200 9385

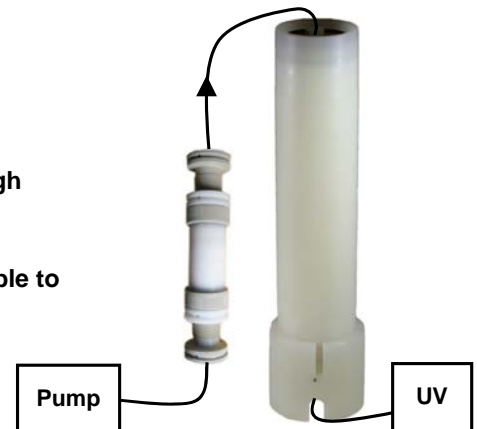
These EasyVarioPrep cartridges do not need any piston : connect directly your tubing fitted with a 1/4"-28 nut.

### Accessories for EasyVarioPrep® D90

Picture	Description	Qty by pack	Reference
	Reusable support for EasyVarioPrep D90. Enable to maintain the cartridge in vertical position.	1	GS090

### How to apply a dry loading on the EasyVarioPrep® D75 and D90 ?

- Use an empty pre-column SuperVarioPrep® D57 150g (ref = GE057P150).
- Thanks to its pressure resistance of 16 bar, you will be able to work at high flow-rate, and operate your purification in a short time !
- In addition, the dry-loading in the pre-column will keep the Rf=0, and enable to reuse the EasyVarioPrep® D75 and D90 cartridges for a new run.



# Aluminium oxide cartridges

## A solution for acidic, basic, or pH-sensitive compounds purification

### Acidic compounds :

In order to reduce peak tailing, and thus enhance the separation efficiency, acidic modifier is added during purification on silica. This modifier (Acetic acid, TFA,...) then needs to be removed at the end of the purification, resulting in time-consuming steps. Due to its acidic surface pH, acidic aluminium oxide can be used instead of silica, offering the advantage to avoid the use of a modifier...

### Basic compounds :

In order to reduce peak tailing, and thus enhance the separation efficiency, basic modifier is added during purification on silica. This modifier (NH<sub>4</sub>OH, TEA,...) then needs to be eliminated at the end of the purification, resulting in time-consuming steps. Due to its basic surface pH, basic aluminium oxide can be used instead of silica, offering the advantage to avoid the use of modifier...

### pH-sensitive compounds :

These compounds can be sensitive to the acidity of silica, resulting in structure modifications. Due to its neutral surface pH, neutral aluminium oxide can be used instead of silica, thus preserving the compound to purify.

**In order to offer easy TLC / Flash transpositions, here is the correspondence between the Merck Aluminium oxide packed in our cartridges, and the Merck TLC plates :**

Aluminium oxide Reference	Description	Activity	pH	Granulometry	TLC Plates References
101078	Aluminium oxide 90 - Acidic	Activity I	pH = 3,5 - 4,5	63-200 µm	No plates available
101077	Aluminium oxide 90 - Neutral	Activity I	pH = 6,8 - 7,8	63-200 µm	1055500001 - 1055810001
101076	Aluminium oxide 90 - Basic	Activity I	pH = 8,5 - 10,5	63-200 µm	1057130001 - 1057310001

### Information about aluminium oxide activity :

Our cartridges are delivered with an activity of grade I (Brockman). For the TLC plates, their activity will be function of their relative humidity when used...

Here is a table showing the impact of relative humidity of the TLC plate on the elution of a dye :

Relative humidity	% water added	Activity grade (Brockman)	Rf of Dye
0%	0	I	0,15
	3	II	0,22
	6	III	0,33
20%	10	IV	0,44
40%	15	V	0,65

Retention on the Flash cartridges will therefore be usually higher than measured on the TLC plates, as it is difficult to keep the activity of the TLC plates at the same grade than the Flash cartridges (grade I : relative humidity near 0%). TLC plates are quickly deactivated by the humidity of the air.




## TLC / Flash transposition

**Same sorbent**  
**Same selectivity**  
**Same quality**  
**Same successful separations !**





## Aluminium oxide cartridges

### MiniVarioFlash® D12 cartridges

Weight of sorbent	Picture	Type of sorbent	Description	Qty by pack	Reference
6 g		Acidic	6g D12 - Aluminium oxide acidic - 101078	20	GL012 01078 6
		Neutral	6g D12 - Aluminium oxide neutral - 101077	20	GL012 01077 6
		Basic	6g D12 - Aluminium oxide basic - 101076	20	GL012 01076 6


These MiniVarioFlash cartridges need the same GP012B1428 piston than the Si60 cartridges.

### SuperVarioFlash® D22 cartridges

Weight of sorbent	Picture	Type of sorbent	Description	Qty by pack	Reference
20 g		Acidic	20g D22 - Aluminium oxide acidic - 101078	20	GL022 01078 20
		Neutral	20g D22 - Aluminium oxide neutral - 101077	20	GL022 01077 20
		Basic	20g D22 - Aluminium oxide basic - 101076	20	GL022 01076 20
30 g		Acidic	30g D22 - Aluminium oxide acidic - 101078	20	GL022 01078 30
		Neutral	30g D22 - Aluminium oxide neutral - 101077	20	GL022 01077 30
		Basic	30g D22 - Aluminium oxide basic - 101076	20	GL022 01076 30



These SuperVarioFlash cartridges need the same GP022B1428 piston than the Si60 cartridges.

### SuperVarioFlash® D26 cartridges

Weight of sorbent	Picture	Type of sorbent	Description	Qty by pack	Reference
60 g		Acidic	60g D26 - Aluminium oxide acidic - 101078	20	GL026 01078 60
		Neutral	60g D26 - Aluminium oxide neutral - 101077	20	GL026 01077 60
		Basic	60g D26 - Aluminium oxide basic - 101076	20	GL026 01076 60

These SuperVarioFlash cartridges need the same GP022B1428 or GP022BS1428 piston than the Si60 cartridges.

### SuperVarioPrep® D40 cartridges

Weight of sorbent	Picture	Type of sorbent	Description	Qty by pack	Reference
160 g		Acidic	160g D40 - Aluminium oxide acidic - 101078	12	GK040 01078 90
		Neutral	160g D40 - Aluminium oxide neutral - 101077	12	GK040 01077 90
		Basic	160g D40 - Aluminium oxide basic - 101076	12	GK040 01076 90
400 g		Acidic	400g D40 - Aluminium oxide acidic - 101078	4	GK040 01078 200
		Neutral	400g D40 - Aluminium oxide neutral - 101077	4	GK040 01077 200
		Basic	400g D40 - Aluminium oxide basic - 101076	4	GK040 01076 200

These SuperVarioPrep cartridges need the same GPVL0401428 or GPi0421428 piston than the Si60 cartridges.

**Shall you need bigger cartridges (D57, D75, D90,...), just ask us !!!  
Each request will be examined, and a solution found.**

## Grafted (RP18, CN, NH2, Diol) cartridges

### A solution for purifying "difficult" compounds, by using special solvent systems

Modified silica are well suited for many separation problems, that cannot be adequately solved by unmodified silica (e.g. :Si60). The intermediate behavior of these modified silica (in terms of hydrophobic or polar interactions) enables to use solvent systems offering more interesting characteristics for the purification.

Reversed phase packings are operated with polar mobile phases (usually water), containing organic solvent as a second solvent (methanol, acetonitrile, dioxane,...).

For hydrophobic solutes, the retention time increases with their hydrophobic character. This hydrophobic character is proportional to the carbon content : methylene groups, methyl groups, aryl groups,...

The grafted silica have their degree of hydrophobicity classified in the following sequence :

**RP18 (n-octadecyl) > RP8 (n-octyl) > Phenyl > C4 (n-butyl) > CN (cyano) > NH2 (amino) > Diol**

### Available modified silica in our product range :

- RP 18** This silica is highly hydrophobic, and can be used only in reversed mode.
- CN, NH2** These silica have the interesting property of working in both reversed mode, and normal mode.  
In reversed mode, they show lower retention than RP18.  
In normal mode, they show lower retention than Si60.  
They combine weak hydrophobic and polar interaction, enabling successful separation of complex samples.
- Diol** This silica has to be used in normal mode, and is an alternative to silica, due to its lower polarity.

In order to offer easy TLC / Flash transpositions, here is the correspondence between the Merck modified silica packed in our cartridges, and the Merck TLC plates :

Plates to use for cartridges packed with : LiChroprep 100RP18 25-40 µm and Silica 60RP18 40-63 µm

TLC plates description	Format (cm)	Content + backing	TLC plates references
TLC Silica gel 60 RP-18 F254s	20 x 20	25 plates glass	1.15389.0001
	10 x 20	50 plates glass	1.15423.0001
	5 x 20	50 plates glass	1.15683.0001
	5 x 10	25 plates glass	1.15685.0001
TLC Silica gel 60 RP-18 F254s	20 x 20	20 plates aluminium	1.05559.0001
	5 x 7,5	20 plates aluminium	1.05560.0001
HPTLC silica gel 60 RP-18	20 x 10	25 plates glass	1.05914.0001
HPTLC silica gel 60 RP-18 F254s	10 x 10	25 plates glass	1.13724.0001
HPTLC silica gel 60 RP-18 W	20 x 10	25 plates glass	1.14296.0001
HPTLC silica gel 60 RP-18 W F254s	10 x 10	25 plates glass	1.13124.0001


NB : RP-18 W plates are fully wettable with water (additional hydrophilic sites). Therefore, their behavior can slightly differ from RP18 silica.

Plates to use for cartridges packed with : LiChroprep 100 CN, 100 NH2, 100 Diol 25-40 µm

TLC plates description	Format (cm)	Content + backing	TLC plates references
HPTLC silica gel 60 CN F254s	20 x 10	25 plates glass	1.12571.0001
HPTLC silica gel 60 CN F254s	10 x 10	25 plates glass	1.16464.0001
TLC Silica gel 60 NH2 F254s	20 x 20	20 plates glass	1.05533.0001
HPTLC silica gel 60 NH2	20 x 10	25 plates glass	1.12572.0001
HPTLC silica gel 60 NH2 F254s	20 x 10	25 plates glass	1.13192.0001
HPTLC silica gel 60 NH2 F254s	10 x 10	25 plates glass	1.15647.0001
HPTLC silica gel 60 Diol F254s	10 x 10	25 plates glass	1.12668.0001
HPTLC silica gel 60 Diol F254s	20 x 10	25 plates glass	1.05636.0001



## Grafted (RP18, CN, NH2, Diol) cartridges

### MiniVarioFlash® D12 cartridges

Weight of silica	Picture	Type of silica	Granulometry	Description	Qty by pack	Reference
3 g		RP18	25-40 µm irregular	3g D12 - RP18 25-40 µm	10	GL012 09303 3
			40-63 µm irregular	4g D12 - RP18 40-63 µm	10	GL012 10167 3
		CN	40-63 µm irregular	3g D12 - CN 40-63 µm	10	GL012 13959 3
		NH2	40-63 µm irregular	3g D12 - NH2 40-63 µm	10	GL012 13974 3
		Diol	40-63 µm irregular	3g D12 - Diol 40-63 µm	10	GL012 13973 3


These MiniVarioFlash cartridges need the same GP012B1428 piston than the Si60 cartridges.

### SuperVarioFlash® D22 cartridges

Weight of silica	Picture	Type of silica	Granulometry	Description	Qty by pack	Reference
11 g		RP18	25-40 µm irregular	11g D22 - RP18 25-40 µm	10	GL022 09303 10
			40-63 µm irregular	13g D22 - RP18 40-63 µm	10	GL022 10167 10
		CN	40-63 µm irregular	11g D22 - CN 40-63 µm	10	GL022 13959 10
		NH2	40-63 µm irregular	11g D22 - NH2 40-63 µm	10	GL022 13974 10
		Diol	40-63 µm irregular	11g D22 - Diol 40-63 µm	10	GL022 13973 10
17 g		RP18	25-40 µm irregular	17g D22 - RP18 25-40 µm	10	GL022 09303 15
			40-63 µm irregular	21g D22 - RP18 40-63 µm	10	GL022 10167 15
		CN	40-63 µm irregular	17g D22 - CN 40-63 µm	10	GL022 13959 15
		NH2	40-63 µm irregular	17g D22 - NH2 40-63 µm	10	GL022 13974 15
		Diol	40-63 µm irregular	17g D22 - Diol 40-63 µm	10	GL022 13973 15




These SuperVarioFlash cartridges need the same GP022B1428 piston than the Si60 cartridges.

### SuperVarioFlash® D26 cartridges

Weight of silica	Picture	Type of silica	Granulometry	Description	Qty by pack	Reference
30 g		RP18	25-40 µm irregular	31g D26 - RP18 25-40 µm	10	GK026 033R
			40-63 µm irregular	37g D26 - RP18 40-63 µm	10	GK026 035R
		CN	40-63 µm irregular	30g D26 - CN 40-63 µm	10	GL026 13959 30
		NH2	40-63 µm irregular	30g D26 - NH2 40-63 µm	10	GL026 13974 30
		Diol	40-63 µm irregular	30g D26 - Diol 40-63 µm	10	GL026 13973 30

These SuperVarioFlash cartridges need the same GP022B1428 or GP022BS1428 piston than the Si60 cartridges.





### SuperVarioPrep® D40 cartridges

Weight of silica	Picture	Type of silica	Granulometry	Description	Qty by pack	Reference
70 g		RP18	25-40 µm irregular	70g D40 - RP18 25-40 µm	1	GK040 083R
			40-63 µm irregular	84g D40 - RP18 40-63 µm	1	GK040 080R
		CN	40-63 µm irregular	70g D40 - CN 40-63 µm	1	GK040 13959 70
		NH2	40-63 µm irregular	70g D40 - NH2 40-63 µm	1	GK040 13974 70
		Diol	40-63 µm irregular	70g D40 - Diol 40-63 µm	1	GK040 13973 70
90 g		RP18	25-40 µm irregular	90g D40 - RP18 25-40 µm	1	GK040 093R
			40-63 µm irregular	108g D40 - RP18 40-63 µm	1	GK040 090R
		CN	40-63 µm irregular	90g D40 - CN 40-63 µm	1	GK040 13959 90
		NH2	40-63 µm irregular	90g D40 - NH2 40-63 µm	1	GK040 13974 90
220 g		RP18	25-40 µm irregular	220g D40 - RP18 25-40 µm	1	GK040 273R
			40-63 µm irregular	270g D40 - RP18 40-63 µm	1	GK040 270R
		CN	40-63 µm irregular	220g D40 - CN 40-63 µm	1	GK040 13959 220
		NH2	40-63 µm irregular	220g D40 - NH2 40-63 µm	1	GK040 13974 220
		Diol	40-63 µm irregular	220g D40 - Diol 40-63 µm	1	GK040 13973 220

These SuperVarioPrep cartridges need the same GPVL0401428 or GPI0421428 piston than the Si60 cartridges.


## Grafted (RP18, CN, NH2, Diol) cartridges

### EasyVarioPrep® D57 cartridges

Weight of silica	Picture	Type of silica	Granulometry	Description	Qty by pack	Reference
170 g		RP18	25-40 µm irregular	170g D57 - RP18 25-40 µm	1	GY057 150 9303
			40-63 µm irregular	200g D57 - RP18 40-63 µm	1	GY057 150 10167
		CN	40-63 µm irregular	170g D57 - CN 40-63 µm	1	GY057 150 13959
		NH2	40-63 µm irregular	170g D57 - NH2 40-63 µm	1	GY057 150 13974
230 g		RP18	25-40 µm irregular	230g D57 - RP18 25-40 µm	1	GY057 200 9303
			40-63 µm irregular	275g D57 - RP18 40-63 µm	1	GY057 200 10167
		CN	40-63 µm irregular	230g D57 - CN 40-63 µm	1	GY057 200 13959
		NH2	40-63 µm irregular	230g D57 - NH2 40-63 µm	1	GY057 200 13974
340 g		RP18	25-40 µm irregular	340g D57 - RP18 25-40 µm	1	GY057 300 9303
			40-63 µm irregular	410g D57 - RP18 40-63 µm	1	GY057 300 10167
		CN	40-63 µm irregular	340g D57 - CN 40-63 µm	1	GY057 300 13959
		NH2	40-63 µm irregular	340g D57 - NH2 40-63 µm	1	GY057 300 13974
450 g		RP18	25-40 µm irregular	450g D57 - RP18 25-40 µm	1	GY057 400 9303
			40-63 µm irregular	540g D57 - RP18 40-63 µm	1	GY057 400 10167
		CN	40-63 µm irregular	450g D57 - CN 40-63 µm	1	GY057 400 13959
		NH2	40-63 µm irregular	450g D57 - NH2 40-63 µm	1	GY057 400 13974
		Diol	40-63 µm irregular	450g D57 - Diol 40-63 µm	1	GY057 400 13973

All these EasyVarioPrep cartridges do not need any piston : connect directly your tubing fitted with a 1/4"-28 nut.

### SuperVarioPrep® D57 cartridges

Weight of silica	Picture	Type of silica	Granulometry	Description	Qty by pack	Reference
400 g		RP18	25-40 µm irregular	400g D57 - RP18 25-40 µm	1	GKY057 400 9303
			25-40 µm irregular	490g D57 - RP18 40-63 µm	1	GKY057 350 10167

NB : These cartridges are designed for on-column dry loading (0-45g of silica), and therefore need to use one adjustable piston GPI0571428

### Recommendations for sorbents used in reversed phase mode (RP18, CN, NH2)

Before first use, these cartridges need to be conditioned with 100% Methanol or 100 % Acetonitrile to activate the silica.

We recommend to store these cartridges in 80% Methanol or 70% Acetonitrile between two purification campaigns.

We also recommend to keep the pistons screwed (without excessive strength) during the storage, and to link the inlet and the outlet of the cartridge with a capillary. This will reduce the drying of the cartridge.

NB : These cartridges can be reused and regenerated many times, but due to the polymer housing, they cannot offer same stability through the time than stainless steel columns !

## How to use our cartridges on an ISCO® Companion® system ?

### Here is the solution !



Piston inlet



Piston outlet



**MiniVarioFlash® D12 2,5g**  
**SuperVarioFlash® D22 10g & 15g**  
**SuperVarioFlash® D26 25g & 30g**

**Requested items :**

**Cartridge inlet :**

- 1 adjustable piston D12 = GP012B1428 (standard)  
D22 = GP022B1428 (standard)  
D26 = GP026BS1428 Special short model
- 1 Union fitting P645
- 1 Adapter 1/4"-28 to Luer female P678

**Cartridges :**

- Special SuperVarioFlash® cartridges without Lock  
D12 = 2,5g D22 = 10g or 15g D26 = 25g or 30g

**Cartridge outlet :**

- Direct connection

**SuperVarioPrep® D40**  
**70 & 90g**

**Requested items :**

**Cartridge inlet :**

- 1 Piston GP10421428
- 1 Union fitting P645
- 1 Adapter 1/4"-28 to Luer female P678

**Cartridges :**

- SuperVarioPrep® D40 cartridges  
70g or 90g

**Cartridge outlet :**

- 1 Adapter 1/4"-28 to Luer male P625

**EasyVarioPrep® D57**  
**150g**

**Requested items :**

**Cartridge inlet :**

- 1 Union fitting P645
- 1 Adapter 1/4"-28 to Luer female P678

**Cartridges :**

- EasyVarioPrep® D57 cartridges  
150g

**Cartridge outlet :**

- 1 Union fitting P645
- 1 Adapter 1/4"-28 to Luer male P625

## Special MiniVarioFlash® & SuperVarioFlash® cartridges

Weight of silica	Picture	Type of silica	Granulometry	Description	Qty by pack	Reference
2,5 g		Si60	15-40 µm irregular	D12 - 2,5g D22 - Si60 15-40 µm	20	GL012 15111 2W
10 g		Si60	15-40 µm irregular	D22 - 10g D22 - Si60 15-40 µm	20	GL022 15111 10W
15 g		Si60	15-40 µm irregular	D22 - 15g D22 - Si60 15-40 µm	20	GL022 15111 15W
25 g		Si60	15-40 µm irregular	D26 - 25g D26 - Si60 15-40 µm *	20	GK026 15111 25W
30 g		Si60	15-40 µm irregular	D26 - 30g D26 - Si60 15-40 µm *	20	GK026 15111 30W

These cartridges have a Luer outlet, WITHOUT "Lock" ring. This Luer outlet can be directly connected to the Companion® system.

\* They can be used with the "standard" adjustable pistons, EXCEPT the D26 25g and 30g, that need the special short version piston available here under.

## Special accessory for SuperVarioFlash® D26

Weight of silica	Picture	Type of silica	Granulometry	Description	Qty by pack	Reference
				Special adjustable piston 1/4 turn for SVF D26 - 1/4"-28 connection Short version : for cartridges with 10g or more of silica	1	GP026 BS1428

**NB : On request, we can supply all our syringes (D12, D22, D26) without the Lock fitting, in order to be Isco Companion® compatible ➡ Please contact us !**

**Other dimensions, like SuperVarioPrep® D40 and EasyVarioPrep® D57 are standard products. You will find them in pages 8-9.**

**Which fittings shall I use with these cartridges ?**

**▶▶▶ Our UpChurch Kit of Flash chromatography fittings !**



Picture	Description	Qty by pack	Reference
	Kit of UpChurch fittings for Flash : 20 nuts 1/4"-28 (P302) + 20 ferrules (P340) + 20 adapters Luer-Lock (P675 + P678 + P624+P625) + 3m of capillary 1/8" Tefzel	1	10 000 645
	Delrin red nut 1/4"-28 male for 1/8" capillary - Ref Upchurch P302	50	10 000 035
	Ferrules for 1/8" capillary - Ref Upchurch P340	50	10 000 036
	Adapter 1/4"-28 female - Luer-Lock male - Ref Upchurch P675	10	10 000 037
	Adapter 1/4"-28 female - Luer-Lock female - Ref Upchurch P678	10	10 000 034
	Adapter 1/4"-28 male - Luer-Lock female - Ref Upchurch P624	20	10 000 038
	Adapter 1/4"-28 male - Luer male - Ref Upchurch P625	20	10 000 032
	Union fitting 1/4"-28 male/male - Ref Upchurch P645	10	10 000 033
	Adapter 10-32 female - Luer-Lock female - Ref Upchurch P659	10	10 000 039

NB : P624, P625 and P645 adapters need no ferrule, but we recommend to use PTFE tape in order to ensure a good sealing.

- Which solvent should I use for the purification ?
- Which loading should I apply to the cartridge ?
- How can I upscale from TLC to Flash ?
- Should I use liquid sample injection, or solid deposit ?

If these questions are part of your daily life...

**▶▶▶ Please contact Merck for a dedicated Flash chromatography training**

Training program available on request.

Training is organized in your company, with a maximum of 10 participants per session.

**For technical or order information :**

**Laurence CERVERA**  
Merck Chimie SAS - Process Separations  
201 rue Carnot - F-94126 Fontenay-sous-Bois Cedex  
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[Laurence.cervera@merck.fr](mailto:Laurence.cervera@merck.fr)

## ARMEN Instrument - SPOT® system

**Developed to match the latest requirements in Flash Chromatography, ARMEN Instrument's SPOT® system features following advantages :**

- 25 bar gradient pump, enabling the use of Merck Chimie's high performance cartridges.
- Available in 100 - 200 - 300 ml/min of flow rate, for fast purification on large cartridges (up to D90).
- Easy-to-use pre-column holder : dry loading is really made simple !
- Fraction collector with 4 racks : up to 5,6 L of fractions collected.
- Integrated UV detector for optimized fraction detection.
- Interactive touch-screen software, user friendly !

*The fully automated solution,  
for fast, reliable, and convenient purifications*



**Designed to be fitted with Merck Chimie's Flash cartridges,  
the SPOT system gives the best from the cartridges.**

For any information about this system, please contact ARMEN Instrument, or its distributors :

ARMEN Instrument  
ZI de Kermelin - 16 rue Ampère  
F-56890 ST AVE

Tel = +33 2 61 84 00  
Fax = +33 2 61 85 00  
[www.armen-instrument.com](http://www.armen-instrument.com)



## Dry loading Some useful information...

### I - When is dry loading of interest ?

You have done your TLC plates, found a solvent which offers an interesting separation, and try to dissolve your sample in this solvent (or in the solvent of the beginning of gradient for those who work in gradient).

**Problem :** It appears that the sample is not very soluble in the selected solvent... and that you will therefore not be able to dissolve the product in a volume lower or equal to 10% of the cartridge's silica weight (or 5% of the cartridge's volume).

**Ex =** For a 30g cartridge, maximum volume to inject is 3 ml approximately.  
For a 200g cartridge, maximum volume to inject is 20 ml approximately.

It is thus not possible to inject the sample by liquid way, because this low solubility reduces considerably the potential of separation of the Flash cartridge, due to the "spreading out" of the sample on silica during the injection.

**Solution :** Dry loading is then a solution of choice, because it will be possible "to immobilize" the product on a low volume of silica, thus allowing to start separation under the best possible conditions.

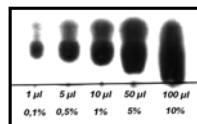
**NB :** Dry loading does not change the laws of chemistry, and the solubility of the products is in no case improved... The advantage is to make it possible for the minority products (thus the less concentrated), to migrate in the column in the form of fractions of small volume (i.e. of volume less than the volume that would have been injected by liquid way). For the main product, the situation is quasi-unchanged, because the solubility of the sample was determined by its own solubility.

**Ex :**

Liquid way		→		→		→	
Dry loading		→		→		→	

The volume occupied by the main product (yellow) remains the same, while the impurity (minority) migrates in less volume. Separation is 100% succeeded in the case of the solid deposit, succeeded to 50% in the case of the liquid injection.

**Advice :** Prepare a TLC plate with various load factor, in order to visualize the behavior of the products regarding overloading.



### II - Dry loading preparation

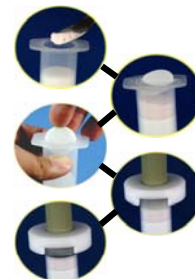
Dissolve the sample in approximately 5x its volume of very good solvent (pure Ethyl Acetate, Methanol, Methylene chloride...). Add a quantity of silica corresponding to approximately 5% the silica's weight of the Flash cartridge.  
**Ex =** Approximately 5g of silica for a cartridge of 90g. This corresponds to approximately 1-3g of silica per gram or ml of sample.

Use a rotative evaporator until obtaining a perfectly dry and homogeneous powder.

### III - Introduction in the cartridge.

Condition if possible the cartridge with the less eluting solvent, before introduction of the dry loading.  
Unscrew the piston, and remove the o-ring seal.  
Insert the sample, then the filter (fine), and finally the frit (thick).  
Fix the piston (entirely unscrewed), and then screw down to bring the filters in contact with the sample.  
Make sure that the sample has an homogeneous thickness when the filter arrives at its the contact .  
Compress the sample, then remove the piston.  
Clean the wall of the cartridge, insert the o-ring seal, and fix the piston, without screwing too firmly.

For dry loading in a pre-column, the procedure is the same.



### IV - Elution

Wet if possible the dry loading with the less eluent solvent (in order to displace air), with a flow reduced to 1/4 of the normal flow rate. As soon as the dry loading is wetted, the purification can be continued at normal flow rate !

## TLC / Flash transposition

### Some useful information...

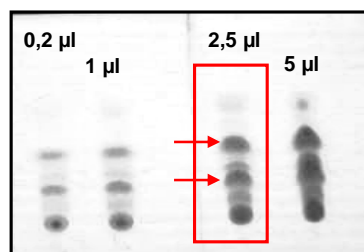
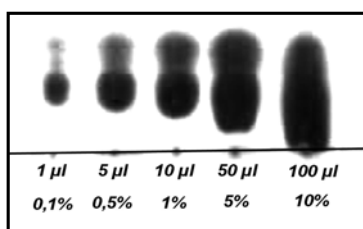
### I - Role of TLC plates

The tests carried out in TLC make it possible to find the "best" solvent for the separation concerned.

This means :  
 - The most interesting selectivity between the products to purify and the impurities to be eliminated.  
 - The best solubility of the product in the less polar solvent (if mixture of two solvents).

In addition to this information, the TLC plate can show highly interesting data regarding the behavior of the product when its load factor increases...

The following plates make it possible to perfectly visualize the degradation of the separation for various quantities deposited:



### II - Preparation of the overloaded TLC plates

Once the solvent of elution is chosen, and if the product is a viscous oil or a solid, dissolve the sample in the solvent of elution, or in the less polar solvent (if possible...). If the product was already liquid, leave it just as it is.

The goal is to pour on the TLC plate spots representing 0,1 µl to 10 µl of "pure" product.

Dilution should therefore be estimated in order to know how much product should be deposited on the plate.

"Thumb rule" : If the sample was not diluted, deposit 0,1 µl, 1 µl, 10 µl. If the sample was diluted, deposit 1 µl, 10 µl, 100 µl.

On basis of the plate reading, determine the load that would allow to obtain the desired quality of separation.

### III - Determination of the quantity to inject on the Flash cartridge

Knowing the quantity of silica present on the TLC plate, it is possible to define a rather simple rule of transposition:

**1 µl deposited in TLC → Flash loading (in ml) = 1% of cartridge's silica weight**

Ex = For the TLC plate on the right (§ I), the selected zone represents 2,5 µl deposited in TLC.

We can therefore inject 2,25 ml of this solution on a 90g cartridge (corresponding to 0,85g of pure sample for this product).

If the sample volume determined above is too high, just prepare a dry loading with the same volume of sample.

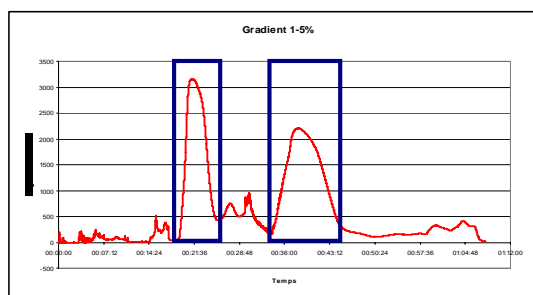
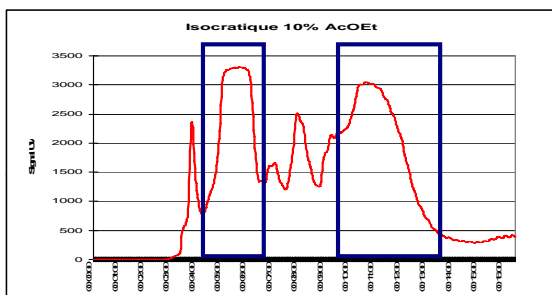
### IV - Example

The chromatogram below was obtained under the same conditions as the TLC plate.

(10% Ethyl Acetate - Duration = 15 minutes).

The expected separation profile is the one obtained.

The chromatogram below was obtained by using a gradient of elution (1-5% Ethyl Acetate), in order to optimize the purity of the fractions, at the price of an higher duration (50 minutes).



## TLC / Flash transposition

### Some useful information...

#### V - Comments

The purifications in Flash are generally better than those awaited when applying the rule of transposition, for two reasons:

- Flash cartridges have an higher bed of silica than TLC plates, and are therefore more effective.
- The elution conditions in Flash are voluntarily less eluting, in order to use in the best way the properties of the solvents and of the silica.

#### VI - Determination of the solvent composition to be used in Flash

In TLC, elution conditions are chosen so as to obtain an elution of the products distributed between  $R_f = 0,1$  and  $R_f = 0,8$  in order to "see" the products on the plate.

In Flash, a "good elution" is when the product of interest elutes in approximately 7-10 volumes of column.

With the help of large approximations, we can use the following formulas to determine the conditions to apply in Flash:

TLC conditions :    **% tlc = % of the most polar solvent (Methanol, Ethyl Acetate, ...)**  
                           **Rf tlc = Rf of the product of interest**

**Isocratic :**            **% of polar solvent to apply in Flash : % flash = % tlc / ( 8x Rf tlc )**

**Gradient :**            **You can apply following gradient, which is adapted especially for dry loadings.**

T = 0	% flash = 0
T = 15 min	% flash = 0,5 x % tlc
T = 60 min	% flash = 4,0 x % tlc

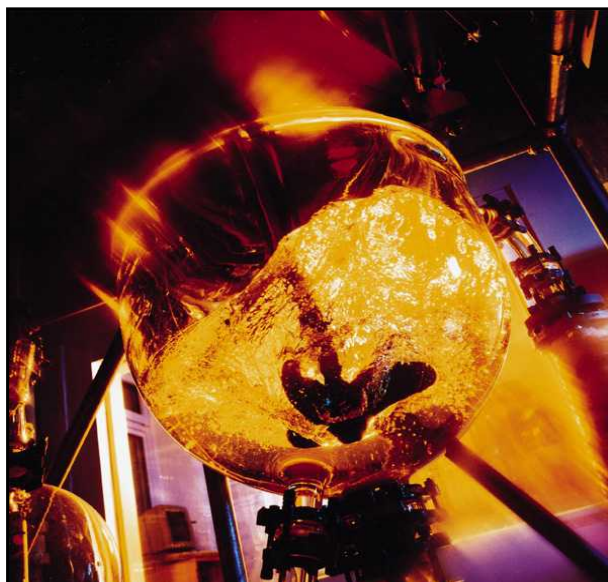
NB : This gradient is calculated for a flow rate equal to 2/3 of the nominal one of the cartridge. Adapt the time if flow rate is different.

#### VII - Specific case for purifications using Methanol

In order not to saturate the polar sites of silica (silanols) with the methanol molecules, we recommend not to use methanol during the conditioning of the cartridge.

During the purification, the products might elute 2x to 3x more quickly than awaited on basis of the TLC results.

In consequence, it is recommended to decrease by half approximately the % of methanol after having applied the formula of the § VI.



## Technical data of the Flash Chromatography cartridges

Technical Datas	MiniVarioFlash® SuperVarioFlash®				
	D12	D22		D26	
Internal Diameter					
Cartridges type	MVF 2,5	SVF 10	SVF 15	SVF 25	SVF 30
Amount of silica (g)	2,5	10	15	25	30
Outer dimensions L x D (mm)	73 x 14	122 x 24	122 x 24	135 x 33	135 x 33
Silica bed L x D (mm)	35 x 12	45 x 22	70 x 22	72 x 28	86 x 28
Silica bed volume (ml)	4	17,1	26,6	44,3	52,9
Sample loadability (g) <sup>(1)</sup>	0,02 - 0,1	0,1 - 0,5	0,1 - 0,7	0,2 - 1,2	0,3 - 1,5
On-column solid deposit		yes (0-8 g)	yes (0-3 g)	yes (0-5 g)	
Recommended flowrate (ml/mn) <sup>(2)</sup>	5 - 10	10 - 20	10 - 20	10 - 30	10 - 30
Max pressure (bar)	3	3	3	3	3

Technical Datas	SuperVarioPrep®				
	D40				
Internal Diameter					
Cartridges type	SVP 70	SVP 90	SVP 180	SVP 200	SVP 300
Amount of silica (g)	70	90	180	200	300
Outer dimensions L x D (mm)	185 x 47	185 x 47	370 x 55	370 x 55	560 x 55
Silica bed L x D (mm)	95 x 40	120 x 40	260 x 40	280 x 40	470 x 40
Silica bed volume (ml)	119	151	327	352	590
Sample loadability (g) <sup>(1)</sup>	0,7 - 3,5	0,9 - 4,5	1,8 - 10	2,0 - 10	3,0 - 15
On-column solid deposit	yes (0-15 g)		yes (0-20 g)		
Recommended flowrate (ml/mn) <sup>(2)</sup>	30 - 80	30 - 80	30 - 80	30 - 80	30 - 80
Max pressure (bar)	6	6	6	6	6

Technical Datas	EasyVarioPrep®						
	D57						
Internal Diameter							
Cartridges type	EVP 150	EVP 200	EVP 300	EVP 350	EVP 400	SVP 400	EVP 600
Amount of silica (g)	150	200	300	350	400	400	600
Outer dimensions L x D (mm)	180 x 65	210 x 65	330 x 65	340 x 75	340 x 65	340 x 75	480 x 65
Silica bed L x D (mm)	105 x 57	140 x 57	210 x 57	250 x 57	275 x 57	275 x 57	420 x 57
Silica bed volume (ml)	268	357	536	638	701	701	1 071
Sample loadability (g) (1)	1,5 - 8	2 - 10	3 - 15	3,5 - 18	4 - 20	4 - 20	6 - 30
On-column solid deposit				yes (0-45g)			
Recommended flowrate (ml/mn) (2)	50 - 200	50-200	50-200	50 - 200	50-200	50-200	50-200
Max pressure (bar)	16	16	16	16	16	16	16

Technical Datas	EasyVarioPrep®			
	D75		D90	
Internal Diameter				
Cartridges type	EVP 600	EVP 800	EVP 800	EVP 1200
Amount of silica (g)	600	800	800	1200
Outer dimensions L x D (mm)	328 x 95	410 x 95	320 x 110	435 x 110
Silica bed L x D (mm)	245 x 75	330 x 75	230 x 90	345 x 90
Silica bed volume (ml)	1 081	1 457	1 457	2 186
Sample loadability (g) (1)	6-30	8 - 40	8-40	12 - 120
On-column solid deposit				
Recommended flowrate (ml/mn) (2)	80-350	80-350	100-500	100-500
Max pressure (bar)	6	6	6	6

<sup>(1)</sup> Average capacity - Can vary depending of the solubility of the sample to purify

<sup>(2)</sup> The flowrate must be adapted so as not to exceed the maximum pressure



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