

# VertiSep™ SPS

## VertiSep™ SPS HPLC Columns

- High purity silica for high stability, efficiency and reproducibility
- Small pore size and surface area, perfect for general purpose and method development
- Fully endcapped to improve peak symmetry
- Polymeric bonding offering high stability at pH range 1.5 - 10 and longer column lifetime
- Direct replacement to Waters® Spherisorb®, Agilent® Zorbax® and Eclipse XDB

VertiSep™ SPS packings are high purity silica which contains less amounts of metal ions and sulfate contaminants offering high stability, efficiency, column-to-column reproducibility.

VertiSep™ SPS packings are small pore size and surface area proving general purpose separations of variety of small compounds and also method development

VertiSep™ SPS reverse phase packings are fully endcapped and shows selectivity as conventional C18 phase.

VertiSep™ SPS packings are polymeric bonding resulting high stability at pH 1.5-10.0\* and longer column lifetime.

VertiSep™ SPS packings provide the results indicated comparable capacity, selectivity efficiency and peak symmetry when compared to Waters® Spherisorb®, Agilent® Zorbax® and Eclipse XDB. Almost methods developed on those can be transferred to VertiSep™ SPS, even for USP applications.

VertiSep™ SPS packings are manufactured to minimize lot-to-lot variation with a strict QC program to ensure excellent column-to-column reproducibility.

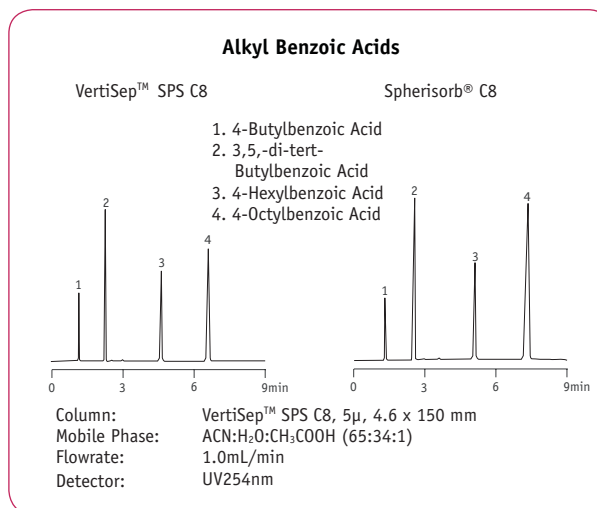
VertiSep™ SPS packings are guaranteed separations of your samples will be comparable to separations with Waters® Spherisorb®, Agilent® Zorbax® and Eclipse XDB columns. If VertiSep™ SPS does not meet your satisfaction, send in comparative data within 45 days and keep VertiSep™ SPS column for FREE.

VertiSep™ SPS are manufactured by statistic process control of silica synthesis, bonding and column packing. The reproducible column packing method control provides exceptional efficiency, symmetry and reproducible capacity factor.

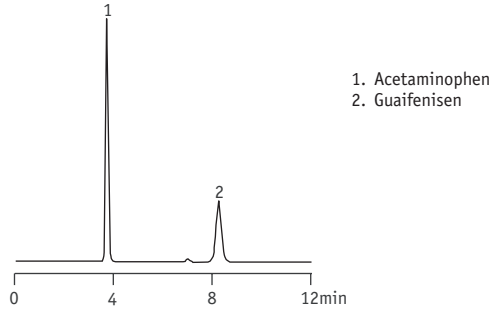


Specifications						
Packing	Particle Size (mm)	Carbon Load (%)	Pore Size (Å)	Pore Volume (mL/g)	Surface Area (m <sup>2</sup> /g)	End Capped
ODS1	3,5,10	6	80	0.5	220	Yes
ODS2	3,5,10	12	80	0.5	220	Yes
C8	3,5,10	6	80	0.5	220	Yes
C6	3,5,10	5	80	0.5	220	Yes
Ph	3,5,10	3	80	0.5	220	Yes
C4	3,5,10	3	80	0.5	220	Yes
CN	3,5,10	3	80	0.5	220	No
NH2	3,5,10	2	80	0.5	220	No
Si	3,5,10	-	80	0.5	220	No
SAX	5,10	4	80	0.5	220	No
SCX	5,10	4	80	0.5	220	No

Packing Characteristics Comparison		
	Spherisorb® ODS2	VertiSep™ SPS ODS2
Particle Shape	Spherical	Spherical
Particle Size	3,5,10µm	3,5,10µm
Pore Size	80Å	80Å
Surface Area	220m <sup>2</sup> /g	220m <sup>2</sup> /g
Carbon Load	12%	12%
Endcapped	Yes	Yes

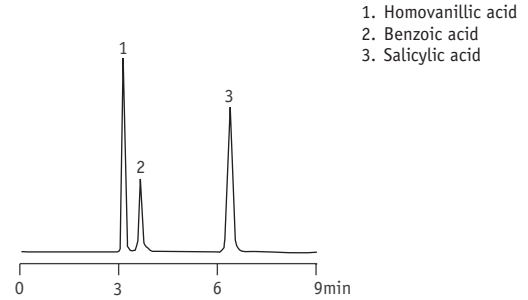


## Acetaminophen and Guaifenesin



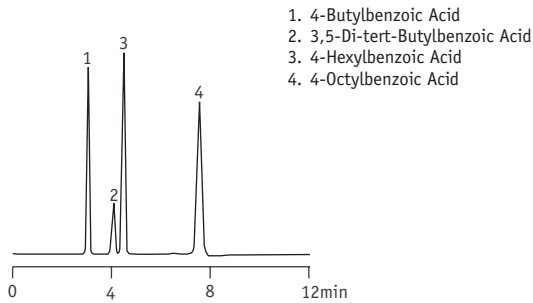
Column: VertiSep™ SPS ODS1 5µm 4.6 x 150 mm  
 Mobile Phase: H<sub>2</sub>O:MeOH (65:35)  
 Flow Rate: 1.0mL/min  
 Detection: UV 254nm

## Aromatic Acids



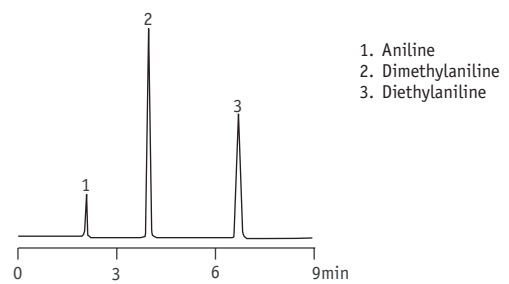
Column: VertiSep™ SPS ODS1 5µm 4.6 x 150 mm  
 Mobile Phase: 0.05M KH<sub>2</sub>PO<sub>4</sub>, pH 3.2:MeOH (60:40)  
 Flow Rate: 1.0mL/min  
 Detection: UV254nm

## Alkyl Benzoic Acids



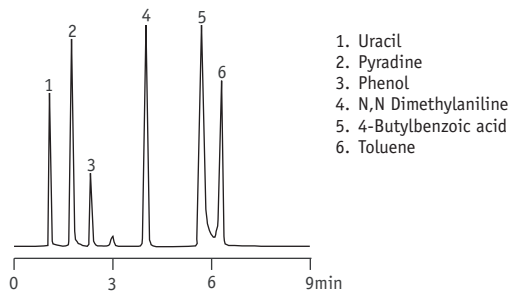
Column: VertiSep™ SPS ODS1 5µm 4.6 x 150 mm  
 Mobile Phase: ACN:H<sub>2</sub>O:CH<sub>3</sub>COOH (65:34:1)  
 Flow Rate: 1.0mL/min  
 Detection: UV254nm

## Aromatic Bases



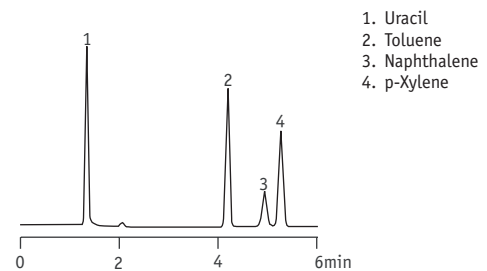
Column: VertiSep™ SPS ODS2 5µm 4.6 x 150 mm  
 Mobile Phase: ACN:H<sub>2</sub>O:TEA (65:34:1)  
 Flow Rate: 1.0mL/min  
 Detection: UV252nm

## Acids, Bases and Neutrals



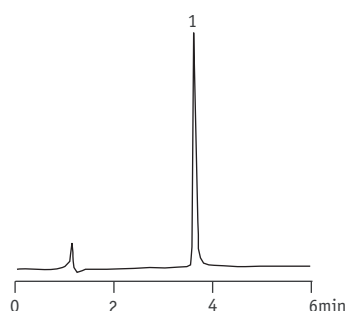
Column: VertiSep™ SPS C8 5µm 4.6 x 150 mm  
 Mobile Phase: ACN:0.05M KH<sub>2</sub>PO<sub>4</sub>, pH 3.2 (50:50)  
 Flow Rate: 1.0mL/min  
 Temp: ambient  
 Detection: UV254nm

## Neutral Aromatics



Column: VertiSep™ SPS C8 5µm 4.6 x 150 mm  
 Mobile Phase: ACN:H<sub>2</sub>O (60:40)  
 Flow Rate: 1.0mL/min  
 Temp: ambient  
 Detection: UV254nm

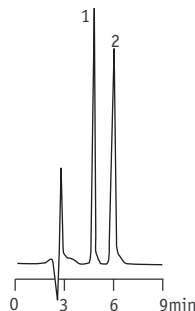
## Antitumor Drug



1. Paclitaxel (Taxol)

Column: VertiSep™ SPS ODS1 5µm 4.6 x 150 mm  
 Mobile Phase: H<sub>2</sub>O:ACN  
 Gradient: Time/%B: 0/50, 10/90  
 Flow Rate: 1.0mL/min  
 Detection: UV204nm

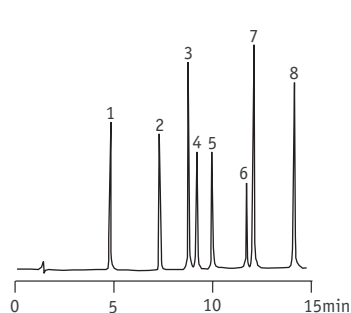
## Stanozolol



1. 4-Acetylbiphenyl
2. Stanozolol

Column: VertiSep™ SPS ODS1 5µm 4.6 x 250 mm  
 Mobile Phase: MeOH: 0.05M Ammonium (85:15)  
 Flow Rate: 1.0mL/min  
 Detection: UV230nm

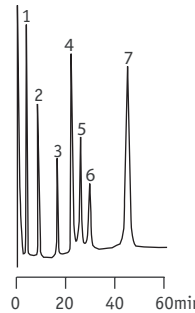
## Hypnotic Drug



- 1 Barbitol
- 2 Allobarbitol
- 3 Phenobarbital
- 4 Butabarbitol
- 5 Butalbital
- 6 Amobarbital
- 7 Mephobarbital
- 8 Flunitrazepam

Column: VertiSep™ SPS ODS1 5µm 4.6 x 150 mm  
 Mobile Phase: A:H<sub>2</sub>O, B:ACN  
 Gradient: Time/%B: 0/10, 16/50  
 Flow Rate: 1.0mL/min  
 Detection: UV204nm

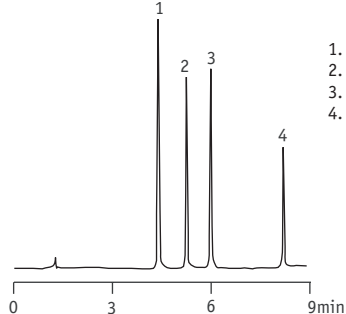
## Peptides



1. Cycloguanil
2. 4-Chlorophenyl-Biguanide
3. Quinine
4. Proguanil
5. Desethylchloroquine
6. Chloroquine
7. Chloroproguanil

Column: VertiSep™ SPS ODS2 5µm 2.1 x 100 mm  
 Mobile Phase: ACN: 0.02M KH<sub>2</sub>PO<sub>4</sub>, pH 2.5 (50:50) containing 60mM SLS and 10 mM TBA  
 Flow Rate: 1.0mL/min  
 Detection: UV254nm

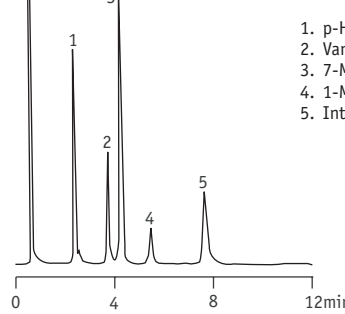
## Glucocorticoid Drugs



1. Prednisolone
2. Betamethasone
3. Prednisolone acetate
4. Betamethasone valerate

Column: VertiSep™ SPS ODS1 5µm 4.6 x 150 mm  
 Mobile Phase: A:H<sub>2</sub>O, B:ACN  
 Flow Rate: Time/%B: 0/20, 10/80  
 Gradient: ambient  
 Detection: UV254nm

## Urine Metabolites



1. p-Hydroxymandelic Acid
2. Vanilmandelic Acid
3. 7-Methyluric Acid
4. 1-Methyluric Acid
5. Internal Standard

Column: VertiSep™ SPS ODS1 5µm 4.6 x 150 mm  
 Mobile Phase: 0.8% EtOH in 10mM KH<sub>2</sub>PO<sub>4</sub>, pH2.3  
 Flow Rate: 2.0mL/min  
 Detection: UV280nm

Ordering Information					
Phase	Particle Size (µm)	Formats	I.D. Length (mm)	QTY	Part No.
<b>VertiSep™ SPS</b>					
ODS1	3	LC/MS	3.2 x 100	1	03PX-C311
	3	LC/MS	3.2 x 150	1	03PX-C411
	3	Analytical	4.0 x 100	1	03PX-D311
	3	Analytical	4.0 x 150	1	03PX-D411
	3	Analytical	4.6 x 100	1	03PX-E311
	3	Analytical	4.6 x 150	1	03PX-E411
	3	Hi-speed	7.8 x 50	1	03PX-G211
	3	Analytical	7.8 x 100	1	03PX-G311
	5	LC/MS	2.1 x 100	1	03PX-B321
	5	LC/MS	2.1 x 150	1	03PX-B421
	5	LC/MS	3.2 x 100	1	03PX-C321
	5	LC/MS	3.2 x 150	1	03PX-C421
	5	Analytical	4.0 x 100	1	03PX-D321
	5	Analytical	4.0 x 150	1	03PX-D421
	5	Analytical	4.0 x 250	1	03PX-D521
	5	Analytical	4.6 x 100	1	03PX-E321
	5	Analytical	4.6 x 125	1	03PX-EC21
	5	Analytical	4.6 x 150	1	03PX-E421
	5	Analytical	4.6 x 250	1	03PX-E521
	ODS2	10	Analytical	4.6 x 250	1
3		LC/MS	3.2 x 100	1	03PY-C311
3		LC/MS	3.2 x 150	1	03PY-C411
3		Analytical	4.0 x 100	1	03PY-D311
3		Analytical	4.0 x 150	1	03PY-D411
3		Analytical	4.6 x 100	1	03PY-E311
3		Analytical	4.6 x 150	1	03PY-E411
3		Hi-speed	7.8 x 50	1	03PY-G211
3		Analytical	7.8 x 100	1	03PY-G311
5		LC/MS	2.1 x 100	1	03PY-B321
5		LC/MS	2.1 x 150	1	03PY-B421
5		LC/MS	3.2 x 100	1	03PY-C321
5		LC/MS	3.2 x 150	1	03PY-C421
5		Analytical	4.0 x 100	1	03PY-D321
5		Analytical	4.0 x 150	1	03PY-D421
5		Analytical	4.0 x 250	1	03PY-D521
5		Analytical	4.6 x 100	1	03PY-E321
5	Analytical	4.6 x 125	1	03PY-EC21	
5	Analytical	4.6 x 150	1	03PY-E421	
5	Analytical	4.6 x 250	1	03PY-E521	
10	Analytical	4.6 x 250	1	03PY-E531	

Ordering Information					
Phase	Particle Size (µm)	Formats	I.D. Length (mm)	QTY	Part No.
<b>VertiSep™ SPS</b>					
C8	3	LC/MS	3.2 x 100	1	03PB-C311
	3	LC/MS	3.2 x 150	1	03PB-C411
	3	Analytical	4.0 x 100	1	03PB-D311
	3	Analytical	4.0 x 150	1	03PB-D411
	3	Analytical	4.6 x 100	1	03PB-E311
	3	Analytical	4.6 x 150	1	03PB-E411
	3	Hi-speed	7.8 x 50	1	03PB-G211
	3	Analytical	7.8 x 100	1	03PB-G311
	5	LC/MS	2.1 x 100	1	03PB-B321
	5	LC/MS	2.1 x 150	1	03PB-B421
	5	LC/MS	3.2 x 100	1	03PB-C321
	5	LC/MS	3.2 x 150	1	03PB-C421
	5	Analytical	4.0 x 100	1	03PB-D321
	5	Analytical	4.0 x 150	1	03PB-D421
	5	Analytical	4.0 x 250	1	03PB-D521
	5	Analytical	4.6 x 100	1	03PB-E321
	C6	5	Analytical	4.6 x 125	1
5		Analytical	4.6 x 150	1	03PB-E421
5		Analytical	4.6 x 250	1	03PB-E521
10		Analytical	4.6 x 250	1	03PB-E531
3		LC/MS	3.2 x 100	1	03PW-C311
3		LC/MS	3.2 x 150	1	03PW-C411
3		Analytical	4.0 x 100	1	03PW-D311
3		Analytical	4.0 x 150	1	03PW-D411
3		Analytical	4.6 x 100	1	03PW-E311
3		Analytical	4.6 x 150	1	03PW-E411
3		Hi-speed	7.8 x 50	1	03PW-G211
3		Analytical	7.8 x 100	1	03PW-G311
5		LC/MS	2.1 x 100	1	03PW-B321
5		LC/MS	2.1 x 150	1	03PW-B421
5		LC/MS	3.2 x 100	1	03PW-C321
5		LC/MS	3.2 x 150	1	03PW-C421
5		Analytical	4.0 x 100	1	03PW-D321
5	Analytical	4.0 x 150	1	03PW-D421	
5	Analytical	4.0 x 250	1	03PW-D521	
5	Analytical	4.6 x 100	1	03PW-E321	
5	Analytical	4.6 x 125	1	03PW-EC21	
5	Analytical	4.6 x 150	1	03PW-E421	
5	Analytical	4.6 x 250	1	03PW-E521	
10	Analytical	4.6 x 250	1	03PW-E531	



# VertiSep™ SPS

Ordering Information					
Phase	Particle Size (µm)	Formats	I.D. Length (mm)	QTY	Part No.
<b>VertiSep™ SPS</b>					
Ph	3	LC/MS	3.2 x 100	1	03PD-C311
	3	LC/MS	3.2 x 150	1	03PD-C411
	3	Analytical	4.0 x 100	1	03PD-D311
	3	Analytical	4.0 x 150	1	03PD-D411
	3	Analytical	4.6 x 100	1	03PD-E311
	3	Analytical	4.6 x 150	1	03PD-E411
	3	Hi-speed	7.8 x 50	1	03PD-G211
	3	Analytical	7.8 x 100	1	03PD-G311
	5	LC/MS	2.1 x 100	1	03PD-B321
	5	LC/MS	2.1 x 150	1	03PD-B421
	5	LC/MS	3.2 x 100	1	03PD-C321
	5	LC/MS	3.2 x 150	1	03PD-C421
	5	Analytical	4.0 x 100	1	03PD-D321
	5	Analytical	4.0 x 150	1	03PD-D421
	5	Analytical	4.0 x 250	1	03PD-D521
	5	Analytical	4.6 x 100	1	03PD-E321
	5	Analytical	4.6 x 125	1	03PD-EC21
	5	Analytical	4.6 x 150	1	03PD-E421
	5	Analytical	4.6 x 250	1	03PD-E521
	C4	10	Analytical	4.6 x 250	1
3		LC/MS	3.2 x 100	1	03PC-C311
3		LC/MS	3.2 x 150	1	03PC-C411
3		Analytical	4.0 x 100	1	03PC-D311
3		Analytical	4.0 x 150	1	03PC-D411
3		Analytical	4.6 x 100	1	03PC-E311
3		Analytical	4.6 x 150	1	03PC-E411
3		Hi-speed	7.8 x 50	1	03PC-G211
3		Analytical	7.8 x 100	1	03PC-G311
5		LC/MS	2.1 x 100	1	03PC-B321
5		LC/MS	2.1 x 150	1	03PC-B421
5		LC/MS	3.2 x 100	1	03PC-C321
5		LC/MS	3.2 x 150	1	03PC-C421
5		Analytical	4.0 x 100	1	03PC-D321
5		Analytical	4.0 x 150	1	03PC-D421
5		Analytical	4.0 x 250	1	03PC-D521
5		Analytical	4.6 x 100	1	03PC-E321
5		Analytical	4.6 x 125	1	03PC-EC21
5		Analytical	4.6 x 150	1	03PC-E421
5		Analytical	4.6 x 250	1	03PC-E521
10	Analytical	4.6 x 250	1	03PC-E531	

Ordering Information					
Phase	Particle Size (µm)	Formats	I.D. Length (mm)	QTY	Part No.
<b>VertiSep™ SPS</b>					
CN	3	LC/MS	3.2 x 100	1	03PE-C311
	3	LC/MS	3.2 x 150	1	03PE-C411
	3	Analytical	4.0 x 100	1	03PE-D311
	3	Analytical	4.0 x 150	1	03PE-D411
	3	Analytical	4.6 x 100	1	03PE-E311
	3	Analytical	4.6 x 150	1	03PE-E411
	3	Hi-speed	7.8 x 50	1	03PE-G211
	3	Analytical	7.8 x 100	1	03PE-G311
	5	LC/MS	2.1 x 100	1	03PE-B321
	5	LC/MS	2.1 x 150	1	03PE-B421
	5	LC/MS	3.2 x 100	1	03PE-C321
	5	LC/MS	3.2 x 150	1	03PE-C421
	5	Analytical	4.0 x 100	1	03PE-D321
	5	Analytical	4.0 x 150	1	03PE-D421
	5	Analytical	4.0 x 250	1	03PE-D521
	5	Analytical	4.6 x 100	1	03PE-E321
	5	Analytical	4.6 x 125	1	03PE-EC21
	5	Analytical	4.6 x 150	1	03PE-E421
	5	Analytical	4.6 x 250	1	03PE-E521
	NH2	10	Analytical	4.6 x 250	1
3		LC/MS	3.2 x 100	1	03PF-C311
3		LC/MS	3.2 x 150	1	03PF-C411
3		Analytical	4.0 x 100	1	03PF-D311
3		Analytical	4.0 x 150	1	03PF-D411
3		Analytical	4.6 x 100	1	03PF-E311
3		Analytical	4.6 x 150	1	03PF-E411
3		Hi-speed	7.8 x 50	1	03PF-G211
3		Analytical	7.8 x 100	1	03PF-G311
5		LC/MS	2.1 x 100	1	03PF-B321
5		LC/MS	2.1 x 150	1	03PF-B421
5		LC/MS	3.2 x 100	1	03PF-C321
5		LC/MS	3.2 x 150	1	03PF-C421
5		Analytical	4.0 x 100	1	03PF-D321
5		Analytical	4.0 x 150	1	03PF-D421
5		Analytical	4.0 x 250	1	03PF-D521
5		Analytical	4.6 x 100	1	03PF-E321
5		Analytical	4.6 x 125	1	03PF-EC21
5		Analytical	4.6 x 150	1	03PF-E421
5		Analytical	4.6 x 250	1	03PF-E521
10	Analytical	4.6 x 250	1	03PF-E531	



Ordering Information					
Phase	Particle Size (µm)	Formats	I.D. Length (mm)	QTY	Part No.
<b>VertiSep™ SPS</b>					
Si	3	LC/MS	3.2 x 100	1	03PG-C311
	3	LC/MS	3.2 x 150	1	03PG-C411
	3	Analytical	4.0 x 100	1	03PG-D311
	3	Analytical	4.0 x 150	1	03PG-D411
	3	Analytical	4.6 x 100	1	03PG-E311
	3	Analytical	4.6 x 150	1	03PG-E411
	3	Hi-speed	7.8 x 50	1	03PG-G211
	3	Analytical	7.8 x 100	1	03PG-G311
	5	LC/MS	2.1 x 100	1	03PG-B321
	5	LC/MS	2.1 x 150	1	03PG-B421
	5	LC/MS	3.2 x 100	1	03PG-C321
	5	LC/MS	3.2 x 150	1	03PG-C421
	5	Analytical	4.0 x 100	1	03PG-D321
	5	Analytical	4.0 x 150	1	03PG-D421
	5	Analytical	4.0 x 250	1	03PG-D521
	5	Analytical	4.6 x 100	1	03PG-E321
	5	Analytical	4.6 x 125	1	03PG-EC21
	5	Analytical	4.6 x 150	1	03PG-E421
	5	Analytical	4.6 x 250	1	03PG-E521
	10	Analytical	4.6 x 250	1	03PG-E531
SCX	5	Analytical	4.6 x 150	1	03PI-E421
	5	Analytical	4.6 x 250	1	03PI-E521
SAX	10	Analytical	4.6 x 250	1	03PI-E531
	5	Analytical	4.6 x 150	1	03PH-E421
	5	Analytical	4.6 x 250	1	03PH-E521
	10	Analytical	4.6 x 250	1	03PH-E531

Ordering Information					
Phase	Particle Size (µm)	Formats	I.D. Length (mm)	QTY	Part No.
<b>VertiSep™ SPS Guard Cartridge*</b>					
ODS1	3	Guard	3.2 x 10	2	03PX-C113
	3	Guard	4.6 x 10	2	03PX-E113
	5	Guard	2.1 x 10	2	03PX-B123
	5	Guard	3.2 x 10	2	03PX-C123
	5	Guard	4.6 x 10	2	03PX-E123
	10	Guard	4.6 x 10	2	03PX-E133
ODS2	3	Guard	3.2 x 10	2	03PY-C113
	3	Guard	4.6 x 10	2	03PY-E113
	5	Guard	2.1 x 10	2	03PY-B123
	5	Guard	3.2 x 10	2	03PY-C123
	5	Guard	4.6 x 10	2	03PY-E123
	10	Guard	4.6 x 10	2	03PY-E133
C8	3	Guard	3.2 x 10	2	03PB-C113
	3	Guard	4.6 x 10	2	03PB-E113
	5	Guard	2.1 x 10	2	03PB-B123
	5	Guard	3.2 x 10	2	03PB-C123
	5	Guard	4.6 x 10	2	03PB-E123
	10	Guard	4.6 x 10	2	03PB-E133

Ordering Information					
Phase	Particle Size (µm)	Formats	I.D. Length (mm)	QTY	Part No.
<b>VertiSep™ SPS Guard Cartridge*</b>					
C6	3	Guard	3.2 x 10	2	03PW-C113
	3	Guard	4.6 x 10	2	03PW-E113
	5	Guard	2.1 x 10	2	03PW-B123
	5	Guard	3.2 x 10	2	03PW-C123
	5	Guard	4.6 x 10	2	03PW-E123
	10	Guard	4.6 x 10	2	03PW-E133
Ph	3	Guard	3.2 x 10	2	03PD-C113
	3	Guard	4.6 x 10	2	03PD-E113
	5	Guard	2.1 x 10	2	03PD-B123
	5	Guard	3.2 x 10	2	03PD-C123
	5	Guard	4.6 x 10	2	03PD-E123
	10	Guard	4.6 x 10	2	03PD-E133
C4	3	Guard	3.2 x 10	2	03PC-C113
	3	Guard	4.6 x 10	2	03PC-E113
	5	Guard	2.1 x 10	2	03PC-B123
	5	Guard	3.2 x 10	2	03PC-C123
	5	Guard	4.6 x 10	2	03PC-E123
	10	Guard	4.6 x 10	2	03PC-E133
CN	3	Guard	3.2 x 10	2	03PE-C113
	3	Guard	4.6 x 10	2	03PE-E113
	5	Guard	2.1 x 10	2	03PE-B123
	5	Guard	3.2 x 10	2	03PE-C123
	5	Guard	4.6 x 10	2	03PE-E123
	10	Guard	4.6 x 10	2	03PE-E133
NH2	3	Guard	3.2 x 10	2	03PF-C113
	3	Guard	4.6 x 10	2	03PF-E113
	5	Guard	2.1 x 10	2	03PF-B123
	5	Guard	3.2 x 10	2	03PF-C123
	5	Guard	4.6 x 10	2	03PF-E123
	10	Guard	4.6 x 10	2	03PF-E133
Si	3	Guard	3.2 x 10	2	03PG-C113
	3	Guard	4.6 x 10	2	03PG-E113
	5	Guard	2.1 x 10	2	03PG-B123
	5	Guard	3.2 x 10	2	03PG-C123
	5	Guard	4.6 x 10	2	03PG-E123
	10	Guard	4.6 x 10	2	03PG-E133
SCX	5	Guard	4.6 x 10	2	03PI-E123
	10	Guard	4.6 x 10	2	03PI-E133
SAX	5	Guard	4.6 x 10	2	03PH-E123
	10	Guard	4.6 x 10	2	03PH-E133

\*Guard holder required

Ordering Information		
Description	QTY	Part No.
<b>Guard Holder with Coupler</b>		
For column I.D. 2.1-7.8 mm	1	0300-0001