

# >3 $\mu\text{m}$ Analytical HPLC Columns

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# ≥3 μm Analytical HPLC Columns



## XBridge BEH Columns

XBridge BEH HPLC Columns are designed for one purpose—to maximize productivity. Whether you are creating a quality-control method or developing a leading-edge LC-MS assay, there is an XBridge Column that will fit your separation needs.



- Unique, mobile-phase pH stability, increasing column lifetime
- Remarkable column reliability, ensuring the ruggedness of assays
- Exceptional particle efficiency, providing unmatched peak shape and capacity

With 13 general-purpose, application-specific sorbents and the widest range of particle sizes available, no other HPLC column family offers the tools you need to meet the most demanding chromatographic challenges. Whether you require robust HPLC methods, seamless UPLC transferability, or preparative scaling for product isolation, count on the versatility of an XBridge BEH HPLC Column.

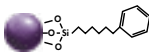

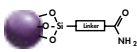

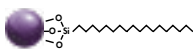
### Column Characteristics

	BEH C <sub>18</sub> 130 Å	BEH Shield RP18, 130 Å	BEH C <sub>8</sub> 130 Å
	UHPLC: 2.5 μm XP HPLC: 3.5, 5, 10 μm	UHPLC: 2.5 μm XP HPLC: 3.5, 5, 10 μm	UHPLC: 2.5 μm XP HPLC: 3.5, 5, 10 μm
Ligand Benefit	General purpose, ideally suited for method development due to extreme pH stability and applicability to the broadest range of compound classes.	Alternate selectivity compared to straight chain C <sub>18</sub> , particularly with phenolic analytes. Compatible with 100% aqueous-phase composition.	General purpose, ideally suited for method development due to extreme pH stability. Applicable to the broadest range of compound classes.
Particle/Ligand			
Ligand Density*	3.1 μmol/m <sup>2</sup>	3.3 μmol/m <sup>2</sup>	3.2 μmol/m <sup>2</sup>
Carbon Load*	18%	17%	13%
Endcapped	Yes	Yes	Yes
USP Class No.	L1	L1	L7
pH Range	1–12	2–11	1–12
Temperature Limits	Low pH = 80 °C, High pH = 60 °C	Low pH = 50 °C, High pH = 45 °C	Low pH = 60 °C, High pH = 60 °C
Surface Area*	185 m <sup>2</sup> /g	185 m <sup>2</sup> /g	185 m <sup>2</sup> /g
Performance Standards	Neutrals QC Reference Material p/n: <a href="#">186006360</a>	Neutrals QC Reference Material p/n: <a href="#">186006360</a>	Neutrals QC Reference Material p/n: <a href="#">186006360</a>
Application Standards	Reversed-Phase QC Reference Material p/n: <a href="#">186006363</a>	Reversed-Phase QC Reference Material p/n: <a href="#">186006363</a>	Reversed-Phase QC Reference Material p/n: <a href="#">186006363</a>


\*Expected or approximate value.

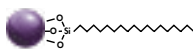




BEH Technology is also available in UPLC particle sizes (ACQUITY UPLC BEH 1.7 μm), please [refer to page 117](#).

Column Characteristics *Continued*

	BEH Phenyl, 130 Å	BEH HILIC, 130 Å	BEH Amide, 130 Å	Glycan BEH Amide, 130 Å	Peptide BEH C <sub>18</sub> , 130 Å
	UHPLC: 2.5 µm <i>XP</i> HPLC: 3.5, 5 µm	UHPLC: 2.5 µm <i>XP</i> HPLC: 3.5 µm	UHPLC: 2.5 µm <i>XP</i> HPLC: 3.5 µm	UHPLC: 2.5 µm <i>XP</i> HPLC: 3.5 µm	HPLC: 3.5, 5, 10 µm
Ligand Benefit	Excellent for method development and offers a unique level of pH stability. Provides alternate selectivity, particularly in regard to polyaromatic compounds.	Excellent for retention of very polar, basic, water soluble analytes. Excellent for mobile phases containing high concentrations of organic solvent.	Good to separate a wide range of very polar compounds, particularly good at separating carbohydrates (saccharides) using high concentrations of organic modifier, elevated temperature, and high pH.	Retention of polar acidic glycans.	High pH and temperature stable. Provides high peptide retention.
Particle/Ligand					
Ligand Density*	3.0 µmol/m <sup>2</sup>	N/A	7.5 µmol/m <sup>2</sup>	7.5 µmol/m <sup>2</sup>	3.1 µmol/m <sup>2</sup>
Carbon Load*	15%	Unbonded	12%	12%	18%
Endcapped	Yes	Yes	No	No	Yes
USP Class No.	L11	L3	L68	L68	L1
pH Range	1-12	1-9	2-11	2-11	1-12
Temperature Limits	Low pH = 80 °C, High pH = 60 °C	Low pH = 45 °C, High pH = 45 °C	Low pH = 90 °C, High pH = 90 °C	Low pH = 90 °C, High pH = 90 °C	Low pH = 80 °C, High pH = 60 °C
Surface Area*	185 m <sup>2</sup> /g	185 m <sup>2</sup> /g	185 m <sup>2</sup> /g	185 m <sup>2</sup> /g	185 m <sup>2</sup> /g
Performance Standards	Neutrals QC Reference Material p/n: <a href="#">186006360</a>	HILIC QC Reference Material p/n: <a href="#">186007226</a>	HILIC QC Reference Material p/n: <a href="#">186007226</a>	Glycan Performance Test Standard p/n: <a href="#">186006349</a>	Cytochrome c Digestion Standard p/n: <a href="#">186006371</a>
Application Standards	Reversed-Phase QC Reference Material p/n: <a href="#">186006363</a>	HILIC QC Reference Material p/n: <a href="#">186007226</a>	HILIC QC Reference Material p/n: <a href="#">186007226</a>	Glycan Performance Test Standard p/n: <a href="#">186006349</a> Dextran Calibration Standard p/n: <a href="#">186006841</a>	Peptide Retention Standard p/n: <a href="#">186006555</a>

\*Expected or approximate value.

 BEH Technology is also available in UPLC particle sizes (ACQUITY UPLC BEH 1.7 µm), please [refer to page 117](#).

Oligonucleotide BEH C <sub>18</sub> , 130 Å	Protein BEH C <sub>4r</sub> , 300 Å	Protein BEH SEC, 125 Å	Protein BEH SEC, 200 Å	Protein BEH SEC, 450 Å
HPLC: 2.5 µm	HPLC: 3.5, 5, 10 µm	HPLC: 3.5 µm	HPLC: 3.5 µm	HPLC: 3.5 µm
High pH and temperature stable. Great separations for oligonucleotides (<45 mers).	High pH and temperature stable. The go-to option for intact proteins.	Helps to minimize secondary interactions in size exclusion mode. For use in fragment, monomer and aggregate analysis. Best for separations of proteins or peptides sized 1 kD - 80 kD.	Helps to minimize secondary interactions in size exclusion mode. For use in fragment, monomer and aggregate analysis. Best for separations of proteins sized 10 kD - 450 kD.	Helps to minimize secondary interactions in size exclusion mode. For use in fragment, monomer and aggregate analysis. Best for separations of proteins sized 100 kD - 1.5 million daltons.
				
3.1 µmol/m <sup>2</sup>	2.4 µmol/m <sup>2</sup>	4.9 µmol/m <sup>2</sup>	5.5 µmol/m <sup>2</sup>	4.8 µmol/m <sup>2</sup>
18%	8%	15%	12%	9%
Yes	No	No	No	No
L1	L26	L33	L33	L33
1-12	1-10	1-8	1-8	1-8
Low pH = 80 °C, High pH = 60 °C	Low pH = 80 °C, High pH = 50 °C	Low pH = 60 °C, High pH = 60 °C	Low pH = 60 °C, High pH = 60 °C	Low pH = 60 °C, High pH = 60 °C
90 m <sup>2</sup> /g	90 m <sup>2</sup> /g	395 m <sup>2</sup> /g	220 m <sup>2</sup> /g	80 m <sup>2</sup> /g
MassPREP OST Standard p/n: <a href="#">186004135</a>	MassPREP Protein Standard Mix p/n: <a href="#">186004900</a>	BEH125 Protein Standard Mix p/n: <a href="#">186006519</a>	BEH200 SEC Protein Standard Mix p/n: <a href="#">186006518</a>	BEH450 SEC Protein Standard Mix p/n: <a href="#">186006842</a>
MassPREP OST Standard p/n: <a href="#">186004135</a>	MassPREP Protein Standard Mix p/n: <a href="#">186004900</a>	BEH125 Protein Standard Mix p/n: <a href="#">186006519</a>	BEH200 SEC Protein Standard Mix p/n: <a href="#">186006518</a>	BEH450 SEC Protein Standard Mix p/n: <a href="#">186006842</a>

XBridge Columns

BEH C <sub>18</sub>	ANALYTICAL COLUMNS						
	Particle Size: 2.5 µm			Particle Size: 3.5 µm		Particle Size: 5 µm	
	Dimension	P/N (1/pk)	P/N (3/pk)	Dimension	P/N (1/pk)	Dimension	P/N (1/pk)
	2.1 × 30 mm <i>XP</i>	<a href="#">186006028</a>	<a href="#">176002546</a>	2.1 × 20 mm <i>JS</i>	<a href="#">186003019</a>	2.1 × 20 mm <i>JS</i>	<a href="#">186003107</a>
	2.1 × 50 mm <i>XP</i>	<a href="#">186006029</a>	<a href="#">176002547</a>	2.1 × 30 mm	<a href="#">186003020</a>	2.1 × 30 mm	<a href="#">186003129</a>
	2.1 × 75 mm <i>XP</i>	<a href="#">186006030</a>	<a href="#">176002548</a>	2.1 × 50 mm	<a href="#">186003021</a>	2.1 × 50 mm	<a href="#">186003108</a>
	2.1 × 100 mm <i>XP</i>	<a href="#">186006031</a>	<a href="#">176002549</a>	2.1 × 100 mm	<a href="#">186003022</a>	2.1 × 100 mm	<a href="#">186003109</a>
	2.1 × 150 mm <i>XP</i>	<a href="#">186006709</a>	<a href="#">176002879</a>	2.1 × 150 mm	<a href="#">186003023</a>	2.1 × 150 mm	<a href="#">186003110</a>
	3.0 × 30 mm <i>XP</i>	<a href="#">186006032</a>	<a href="#">176002550</a>	3.0 × 30 mm	<a href="#">186003025</a>	3.0 × 30 mm	<a href="#">186003111</a>
	3.0 × 50 mm <i>XP</i>	<a href="#">186006033</a>	<a href="#">176002551</a>	3.0 × 50 mm	<a href="#">186003026</a>	3.0 × 50 mm	<a href="#">186003131</a>
	3.0 × 75 mm <i>XP</i>	<a href="#">186006034</a>	<a href="#">176002552</a>	3.0 × 100 mm	<a href="#">186003027</a>	3.0 × 100 mm	<a href="#">186003132</a>
	3.0 × 100 mm <i>XP</i>	<a href="#">186006035</a>	<a href="#">176002553</a>	3.0 × 150 mm	<a href="#">186003028</a>	3.0 × 150 mm	<a href="#">186003112</a>
	3.0 × 150 mm <i>XP</i>	<a href="#">186006710</a>	<a href="#">176002880</a>	4.6 × 30 mm	<a href="#">186003030</a>	3.0 × 250 mm	<a href="#">186003133</a>
	4.6 × 30 mm <i>XP</i>	<a href="#">186006036</a>	—	4.6 × 50 mm	<a href="#">186003031</a>	4.6 × 30 mm	<a href="#">186003135</a>
	4.6 × 50 mm <i>XP</i>	<a href="#">186006037</a>	—	4.6 × 75 mm	<a href="#">186003032</a>	4.6 × 50 mm	<a href="#">186003113</a>
	4.6 × 75 mm <i>XP</i>	<a href="#">186006038</a>	—	4.6 × 100 mm	<a href="#">186003033</a>	4.6 × 75 mm	<a href="#">186003114</a>
	4.6 × 100 mm <i>XP</i>	<a href="#">186006039</a>	—	4.6 × 150 mm	<a href="#">186003034</a>	4.6 × 100 mm	<a href="#">186003115</a>
	4.6 × 150 mm <i>XP</i>	<a href="#">186006711</a>	—	4.6 × 250 mm	<a href="#">186003943</a>	4.6 × 150 mm	<a href="#">186003116</a>
						4.6 × 250 mm	<a href="#">186003117</a>

PREPARATIVE COLUMNS					
Particle Size: 5 µm			Particle Size: 10 µm		
Dimension	Type	P/N (1/pk)	Dimension	Type	P/N (1/pk)
10 × 10 mm	Guard Cartridge	<a href="#">186002972</a> <sup>1</sup>	10 × 10 mm	Guard Cartridge	<a href="#">186003889</a> <sup>1</sup>
10 × 50 mm	OBD Column	<a href="#">186008164</a>	19 × 10 mm	Guard Cartridge	<a href="#">186003892</a> <sup>2</sup>
10 × 100 mm	OBD Column	<a href="#">186008165</a>	30 × 10 mm	Guard Cartridge	<a href="#">186006892</a> <sup>3</sup>
10 × 150 mm	OBD Column	<a href="#">186008166</a>	10 × 150 mm	OBD Column	<a href="#">186008210</a>
10 × 250 mm	OBD Column	<a href="#">186008167</a>	10 × 250 mm	OBD Column	<a href="#">186008211</a>
19 × 10 mm	Guard Cartridge	<a href="#">186002975</a> <sup>2</sup>	19 × 50 mm	OBD Column	<a href="#">186003893</a>
19 × 50 mm	OBD Column	<a href="#">186002977</a>	19 × 100 mm	OBD Column	<a href="#">186003901</a>
19 × 100 mm	OBD Column	<a href="#">186002978</a>	19 × 150 mm	OBD Column	<a href="#">186003894</a>
19 × 150 mm	OBD Column	<a href="#">186002979</a>	19 × 250 mm	OBD Column	<a href="#">186003895</a>
19 × 250 mm	OBD Column	<a href="#">186004021</a>	30 × 75 mm	OBD Column	<a href="#">186004711</a>
30 × 10 mm	Guard Cartridge	<a href="#">186006893</a> <sup>3</sup>	30 × 100 mm	OBD Column	<a href="#">186003930</a>
30 × 50 mm	OBD Column	<a href="#">186002980</a>	30 × 150 mm	OBD Column	<a href="#">186003896</a>
30 × 75 mm	OBD Column	<a href="#">186002981</a>	30 × 250 mm	OBD Column	<a href="#">186003897</a>
30 × 100 mm	OBD Column	<a href="#">186002982</a>	50 × 50 mm	OBD Column	<a href="#">186003898</a>
30 × 150 mm	OBD Column	<a href="#">186003284</a>	50 × 100 mm	OBD Column	<a href="#">186003902</a>
30 × 250 mm	OBD Column	<a href="#">186004025</a>	50 × 150 mm	OBD Column	<a href="#">186003899</a>
50 × 50 mm	OBD Column	<a href="#">186003933</a>	50 × 250 mm	OBD Column	<a href="#">186003900</a>
50 × 100 mm	OBD Column	<a href="#">186003937</a>			
50 × 150 mm	OBD Column	<a href="#">186003929</a>			
50 × 250 mm	OBD Column	<a href="#">186004107</a>			

<sup>1</sup> Requires 10 × 10 mm Cartridge Holder, p/n: [289000779](#).  
<sup>2</sup> Requires 19 × 10 mm Cartridge Holder, p/n: [186000709](#).  
<sup>3</sup> Requires 30 × 10 mm Prep Guard Holder, p/n: [186006912](#).

XBridge Columns *Continued*

ANALYTICAL COLUMNS						
Particle Size: 2.5 µm			Particle Size: 3.5 µm		Particle Size: 5 µm	
Dimension	P/N (1/pk)	P/N (3/pk)	Dimension	P/N (1/pk)	Dimension	P/N (1/pk)
2.1 × 30 mm <i>XP</i>	<a href="#">186006040</a>	<a href="#">176002554</a>	2.1 × 30 mm	<a href="#">186003046</a>	2.1 × 30 mm	<a href="#">186003187</a>
2.1 × 50 mm <i>XP</i>	<a href="#">186006041</a>	<a href="#">176002555</a>	2.1 × 50 mm	<a href="#">186003047</a>	2.1 × 50 mm	<a href="#">186003011</a>
2.1 × 75 mm <i>XP</i>	<a href="#">186006042</a>	<a href="#">176002556</a>	2.1 × 100 mm	<a href="#">186003048</a>	2.1 × 100 mm	<a href="#">186003012</a>
2.1 × 100 mm <i>XP</i>	<a href="#">186006043</a>	<a href="#">176002557</a>	2.1 × 150 mm	<a href="#">186003049</a>	2.1 × 150 mm	<a href="#">186003013</a>
2.1 × 150 mm <i>XP</i>	<a href="#">186006712</a>	<a href="#">176002881</a>	3.0 × 30 mm	<a href="#">186003182</a>	3.0 × 30 mm	<a href="#">186003189</a>
3.0 × 30 mm <i>XP</i>	<a href="#">186006044</a>	<a href="#">176002558</a>	3.0 × 50 mm	<a href="#">186003050</a>	3.0 × 50 mm	<a href="#">186003190</a>
3.0 × 50 mm <i>XP</i>	<a href="#">186006045</a>	<a href="#">176002559</a>	3.0 × 100 mm	<a href="#">186003051</a>	3.0 × 100 mm	<a href="#">186003191</a>
3.0 × 75 mm <i>XP</i>	<a href="#">186006046</a>	<a href="#">176002560</a>	3.0 × 150 mm	<a href="#">186003052</a>	3.0 × 150 mm	<a href="#">186003014</a>
3.0 × 100 mm <i>XP</i>	<a href="#">186006047</a>	<a href="#">176002561</a>	4.6 × 30 mm	<a href="#">186003184</a>	3.0 × 250 mm	<a href="#">186003192</a>
3.0 × 150 mm <i>XP</i>	<a href="#">186006713</a>	<a href="#">176002882</a>	4.6 × 50 mm	<a href="#">186003053</a>	4.6 × 30 mm	<a href="#">186003194</a>
4.6 × 30 mm <i>XP</i>	<a href="#">186006048</a>	—	4.6 × 75 mm	<a href="#">186003185</a>	4.6 × 50 mm	<a href="#">186003015</a>
4.6 × 50 mm <i>XP</i>	<a href="#">186006049</a>	—	4.6 × 100 mm	<a href="#">186003054</a>	4.6 × 75 mm	<a href="#">186003195</a>
4.6 × 75 mm <i>XP</i>	<a href="#">186006050</a>	—	4.6 × 150 mm	<a href="#">186003055</a>	4.6 × 100 mm	<a href="#">186003016</a>
4.6 × 100 mm <i>XP</i>	<a href="#">186006051</a>	—	4.6 × 250 mm	<a href="#">186003963</a>	4.6 × 150 mm	<a href="#">186003017</a>
4.6 × 150 mm <i>XP</i>	<a href="#">186006714</a>	—			4.6 × 250 mm	<a href="#">186003018</a>

PREPARATIVE COLUMNS					
Particle Size: 5 µm			Particle Size: 10 µm		
Dimension	Type	P/N (1/pk)	Dimension	Type	P/N (1/pk)
10 × 10 mm	Guard Cartridge	<a href="#">186002991</a> <sup>1</sup>	10 × 10 mm	Guard Cartridge	<a href="#">186004003</a> <sup>1</sup>
10 × 50 mm	OBD Column	<a href="#">186008172</a>	19 × 10 mm	Guard Cartridge	<a href="#">186004006</a> <sup>2</sup>
10 × 100 mm	OBD Column	<a href="#">186008173</a>	30 × 10 mm	Guard Cartridge	<a href="#">186006894</a> <sup>3</sup>
10 × 150 mm	OBD Column	<a href="#">186008174</a>	10 × 150 mm	OBD Column	<a href="#">186008215</a>
10 × 250 mm	OBD Column	<a href="#">186008175</a>	10 × 250 mm	OBD Column	<a href="#">186008216</a>
19 × 10 mm	Guard Cartridge	<a href="#">186002992</a> <sup>2</sup>	19 × 50 mm	OBD Column	<a href="#">186004007</a>
19 × 50 mm	OBD Column	<a href="#">186002993</a>	19 × 100 mm	OBD Column	<a href="#">186004008</a>
19 × 100 mm	OBD Column	<a href="#">186002994</a>	19 × 150 mm	OBD Column	<a href="#">186004009</a>
19 × 150 mm	OBD Column	<a href="#">186002995</a>	19 × 250 mm	OBD Column	<a href="#">186004010</a>
19 × 250 mm	OBD Column	<a href="#">186004023</a>	30 × 150 mm	OBD Column	<a href="#">186004011</a>
30 × 10 mm	Guard Cartridge	<a href="#">186006895</a> <sup>3</sup>	30 × 250 mm	OBD Column	<a href="#">186004012</a>
30 × 50 mm	OBD Column	<a href="#">186002996</a>	50 × 50 mm	OBD Column	<a href="#">186004013</a>
30 × 75 mm	OBD Column	<a href="#">186003269</a>	50 × 100 mm	OBD Column	<a href="#">186004014</a>
30 × 100 mm	OBD Column	<a href="#">186002997</a>	50 × 150 mm	OBD Column	<a href="#">186004015</a>
30 × 150 mm	OBD Column	<a href="#">186003083</a>	50 × 250 mm	OBD Column	<a href="#">186004016</a>
50 × 50 mm	OBD Column	<a href="#">186003934</a>			
50 × 100 mm	OBD Column	<a href="#">186003938</a>			

<sup>1</sup> Requires 10 × 10 mm Cartridge Holder, p/n: [289000779](#).

<sup>2</sup> Requires 19 × 10 mm Cartridge Holder, p/n: [186000709](#).

<sup>3</sup> Requires 30 × 10 mm Prep Guard Holder, p/n: [186006912](#).

BEH Shield RP18 ANALYTICAL COLUMNS						
Particle Size: 2.5 µm			Particle Size: 3.5 µm		Particle Size: 5 µm	
Dimension	P/N (1/pk)	P/N (3/pk)	Dimension	P/N (1/pk)	Dimension	P/N (1/pk)
2.1 × 30 mm <i>XP</i>	<a href="#">186006052</a>	<a href="#">176002562</a>	2.1 × 30 mm	<a href="#">186003035</a>	2.1 × 30 mm	<a href="#">186003157</a>
2.1 × 50 mm <i>XP</i>	<a href="#">186006053</a>	<a href="#">176002563</a>	2.1 × 50 mm	<a href="#">186003036</a>	2.1 × 50 mm	<a href="#">186002999</a>
2.1 × 75 mm <i>XP</i>	<a href="#">186006054</a>	<a href="#">176002564</a>	2.1 × 100 mm	<a href="#">186003037</a>	2.1 × 100 mm	<a href="#">186003002</a>
2.1 × 100 mm <i>XP</i>	<a href="#">186006055</a>	<a href="#">176002565</a>	2.1 × 150 mm	<a href="#">186003038</a>	2.1 × 150 mm	<a href="#">186003003</a>
2.1 × 150 mm <i>XP</i>	<a href="#">186006715</a>	<a href="#">176002883</a>	3.0 × 30 mm	<a href="#">186003153</a>	3.0 × 50 mm	<a href="#">186003160</a>
3.0 × 20 mm <i>IS</i>	<a href="#">186003140</a>	—	3.0 × 50 mm	<a href="#">186003039</a>	3.0 × 100 mm	<a href="#">186003004</a>
3.0 × 30 mm <i>XP</i>	<a href="#">186006056</a>	<a href="#">176002566</a>	3.0 × 100 mm	<a href="#">186003040</a>	3.0 × 150 mm	<a href="#">186003005</a>
3.0 × 50 mm <i>XP</i>	<a href="#">186006057</a>	<a href="#">176002567</a>	3.0 × 150 mm	<a href="#">186003041</a>	3.0 × 250 mm	<a href="#">186003161</a>
3.0 × 75 mm <i>XP</i>	<a href="#">186006058</a>	<a href="#">176002568</a>	4.6 × 30 mm	<a href="#">186003155</a>	4.6 × 50 mm	<a href="#">186003006</a>
3.0 × 100 mm <i>XP</i>	<a href="#">186006059</a>	<a href="#">176002569</a>	4.6 × 50 mm	<a href="#">186003042</a>	4.6 × 75 mm	<a href="#">186003007</a>
3.0 × 150 mm <i>XP</i>	<a href="#">186006716</a>	<a href="#">176002884</a>	4.6 × 75 mm	<a href="#">186003043</a>	4.6 × 100 mm	<a href="#">186003008</a>
4.6 × 20 mm <i>IS</i>	<a href="#">186003144</a>	—	4.6 × 100 mm	<a href="#">186003044</a>	4.6 × 150 mm	<a href="#">186003009</a>
4.6 × 30 mm <i>XP</i>	<a href="#">186006060</a>	—	4.6 × 150 mm	<a href="#">186003045</a>	4.6 × 250 mm	<a href="#">186003010</a>
4.6 × 50 mm <i>XP</i>	<a href="#">186006061</a>	—	4.6 × 250 mm	<a href="#">186003964</a>		
4.6 × 75 mm <i>XP</i>	<a href="#">186006062</a>	—				
4.6 × 100 mm <i>XP</i>	<a href="#">186006063</a>	—				
4.6 × 150 mm <i>XP</i>	<a href="#">186006717</a>	—				

PREPARATIVE COLUMNS					
Particle Size: 5 µm			Particle Size: 10 µm		
Dimension	Type	P/N (1/pk)	Dimension	Type	P/N (1/pk)
10 × 10 mm	Guard Cartridge	<a href="#">186002983</a> <sup>1</sup>	10 × 10 mm	Guard Cartridge	<a href="#">186003988</a> <sup>1</sup>
10 × 50 mm	OBD Column	<a href="#">186008168</a>	19 × 10 mm	Guard Cartridge	<a href="#">186003991</a> <sup>2</sup>
10 × 100 mm	OBD Column	<a href="#">186008169</a>	30 × 10 mm	Guard Cartridge	<a href="#">186006897</a> <sup>3</sup>
10 × 150 mm	OBD Column	<a href="#">186008170</a>	10 × 150 mm	OBD Column	<a href="#">186008213</a>
10 × 250 mm	OBD Column	<a href="#">186008171</a>	10 × 250 mm	OBD Column	<a href="#">186008214</a>
19 × 10 mm	Guard Cartridge	<a href="#">186002984</a> <sup>2</sup>	19 × 50 mm	OBD Column	<a href="#">186003992</a>
19 × 50 mm	OBD Column	<a href="#">186002985</a>	19 × 100 mm	OBD Column	<a href="#">186003993</a>
19 × 100 mm	OBD Column	<a href="#">186002986</a>	19 × 150 mm	OBD Column	<a href="#">186003994</a>
19 × 150 mm	OBD Column	<a href="#">186002987</a>	19 × 250 mm	OBD Column	<a href="#">186003995</a>
19 × 250 mm	OBD Column	<a href="#">186004022</a>	30 × 150 mm	OBD Column	<a href="#">186003996</a>
30 × 10 mm	Guard Cartridge	<a href="#">186006898</a> <sup>3</sup>	30 × 250 mm	OBD Column	<a href="#">186003997</a>
30 × 50 mm	OBD Column	<a href="#">186002988</a>	50 × 50 mm	OBD Column	<a href="#">186003998</a>
30 × 75 mm	OBD Column	<a href="#">186003262</a>	50 × 100 mm	OBD Column	<a href="#">186003999</a>
30 × 100 mm	OBD Column	<a href="#">186002989</a>	50 × 150 mm	OBD Column	<a href="#">186004001</a>
30 × 150 mm	OBD Column	<a href="#">186002990</a>	50 × 250 mm	OBD Column	<a href="#">186004002</a>
50 × 50 mm	OBD Column	<a href="#">186003935</a>			
50 × 100 mm	OBD Column	<a href="#">186003939</a>			

<sup>1</sup>Requires 10 × 10 mm Cartridge Holder, p/n: [289000779](#).

<sup>2</sup>Requires 19 × 10 mm Cartridge Holder, p/n: [186000709](#).

<sup>3</sup>Requires 30 × 10 mm Prep Guard Holder, p/n: [186006912](#).



XBridge Columns *Continued*

BEH Phenyl						
ANALYTICAL COLUMNS						
Particle Size: 2.5 $\mu\text{m}$			Particle Size: 3.5 $\mu\text{m}$		Particle Size: 5 $\mu\text{m}$	
Dimension	P/N (1/pk)	P/N (3/pk)	Dimension	P/N (1/pk)	Dimension	P/N (1/pk)
2.1 $\times$ 30 mm <i>XP</i>	<a href="#">186006064</a>	<a href="#">176002570</a>	2.1 $\times$ 30 mm	<a href="#">186003321</a>	2.1 $\times$ 50 mm	<a href="#">186003338</a>
2.1 $\times$ 50 mm <i>XP</i>	<a href="#">186006065</a>	<a href="#">176002571</a>	2.1 $\times$ 50 mm	<a href="#">186003322</a>	2.1 $\times$ 100 mm	<a href="#">186003339</a>
2.1 $\times$ 75 mm <i>XP</i>	<a href="#">186006066</a>	<a href="#">176002572</a>	2.1 $\times$ 100 mm	<a href="#">186003323</a>	2.1 $\times$ 150 mm	<a href="#">186003340</a>
2.1 $\times$ 100 mm <i>XP</i>	<a href="#">186006067</a>	<a href="#">176002573</a>	2.1 $\times$ 150 mm	<a href="#">186003324</a>	3.0 $\times$ 50 mm	<a href="#">186003343</a>
2.1 $\times$ 150 mm <i>XP</i>	<a href="#">186006718</a>	<a href="#">176002885</a>	3.0 $\times$ 50 mm	<a href="#">186003327</a>	3.0 $\times$ 100 mm	<a href="#">186003344</a>
3.0 $\times$ 30 mm <i>XP</i>	<a href="#">186006068</a>	<a href="#">176002574</a>	3.0 $\times$ 100 mm	<a href="#">186003328</a>	3.0 $\times$ 150 mm	<a href="#">186003345</a>
3.0 $\times$ 50 mm <i>XP</i>	<a href="#">186006069</a>	<a href="#">176002575</a>	3.0 $\times$ 150 mm	<a href="#">186003329</a>	3.0 $\times$ 250 mm	<a href="#">186003346</a>
3.0 $\times$ 75 mm <i>XP</i>	<a href="#">186006070</a>	<a href="#">176002576</a>	4.6 $\times$ 30 mm	<a href="#">186003331</a>	4.6 $\times$ 50 mm	<a href="#">186003349</a>
3.0 $\times$ 100 mm <i>XP</i>	<a href="#">186006071</a>	<a href="#">176002577</a>	4.6 $\times$ 50 mm	<a href="#">186003332</a>	4.6 $\times$ 75 mm	<a href="#">186003350</a>
3.0 $\times$ 150 mm <i>XP</i>	<a href="#">186006719</a>	<a href="#">176002886</a>	4.6 $\times$ 75 mm	<a href="#">186003333</a>	4.6 $\times$ 100 mm	<a href="#">186003351</a>
4.6 $\times$ 30 mm <i>XP</i>	<a href="#">186006072</a>	—	4.6 $\times$ 100 mm	<a href="#">186003334</a>	4.6 $\times$ 150 mm	<a href="#">186003352</a>
4.6 $\times$ 50 mm <i>XP</i>	<a href="#">186006073</a>	—	4.6 $\times$ 150 mm	<a href="#">186003335</a>	4.6 $\times$ 250 mm	<a href="#">186003353</a>
4.6 $\times$ 75 mm <i>XP</i>	<a href="#">186006074</a>	—	4.6 $\times$ 250 mm	<a href="#">186003965</a>		
4.6 $\times$ 100 mm <i>XP</i>	<a href="#">186006075</a>	—				
4.6 $\times$ 150 mm <i>XP</i>	<a href="#">186006720</a>	—				

PREPARATIVE COLUMNS		
Particle Size: 5 $\mu\text{m}$		
Dimension	Type	P/N (1/pk)
10 $\times$ 10 mm	Guard Cartridge	<a href="#">186003354</a> <sup>1</sup>
10 $\times$ 50 mm	OBD Column	<a href="#">186008176</a>
10 $\times$ 100 mm	OBD Column	<a href="#">186008177</a>
10 $\times$ 150 mm	OBD Column	<a href="#">186008178</a>
10 $\times$ 250 mm	OBD Column	<a href="#">186008179</a>
19 $\times$ 10 mm	Guard Cartridge	<a href="#">186003355</a> <sup>2</sup>
19 $\times$ 50 mm	OBD Column	<a href="#">186003356</a>
19 $\times$ 100 mm	OBD Column	<a href="#">186003357</a>
19 $\times$ 150 mm	OBD Column	<a href="#">186003358</a>
19 $\times$ 250 mm	OBD Column	<a href="#">186004024</a>
30 $\times$ 10 mm	Guard Cartridge	<a href="#">186006891</a> <sup>3</sup>
30 $\times$ 50 mm	OBD Column	<a href="#">186003277</a>
30 $\times$ 75 mm	OBD Column	<a href="#">186003278</a>
30 $\times$ 100 mm	OBD Column	<a href="#">186003279</a>
30 $\times$ 150 mm	OBD Column	<a href="#">186003276</a>
50 $\times$ 50 mm	OBD Column	<a href="#">186003936</a>
50 $\times$ 100 mm	OBD Column	<a href="#">186003940</a>

<sup>1</sup>Requires 10  $\times$  10 mm Cartridge Holder, p/n: [289000779](#).

<sup>2</sup>Requires 19  $\times$  10 mm Cartridge Holder, p/n: [186000709](#).

<sup>3</sup>Requires 30  $\times$  10 mm Prep Guard Holder, p/n: [186006912](#).

BEH HILIC						
ANALYTICAL COLUMNS						
Particle Size: 2.5 $\mu\text{m}$			Particle Size: 3.5 $\mu\text{m}$		Particle Size: 5 $\mu\text{m}$	
Dimension	P/N (1/pk)	P/N (3/pk)	Dimension	P/N (1/pk)	Dimension	P/N (1/pk)
2.1 $\times$ 30 mm <i>XP</i>	<a href="#">186006076</a>	<a href="#">176002578</a>	2.1 $\times$ 50 mm	<a href="#">186004432</a>	2.1 $\times$ 50 mm	<a href="#">186004444</a>
2.1 $\times$ 50 mm <i>XP</i>	<a href="#">186006077</a>	<a href="#">176002579</a>	2.1 $\times$ 100 mm	<a href="#">186004433</a>	2.1 $\times$ 100 mm	<a href="#">186004445</a>
2.1 $\times$ 75 mm <i>XP</i>	<a href="#">186006078</a>	<a href="#">176002580</a>	2.1 $\times$ 150 mm	<a href="#">186004434</a>	2.1 $\times$ 150 mm	<a href="#">186004446</a>
2.1 $\times$ 100 mm <i>XP</i>	<a href="#">186006079</a>	<a href="#">176002581</a>	3.0 $\times$ 100 mm	<a href="#">186004436</a>	3.0 $\times$ 100 mm	<a href="#">186004448</a>
2.1 $\times$ 150 mm <i>XP</i>	<a href="#">186006721</a>	<a href="#">176002887</a>	4.6 $\times$ 50 mm	<a href="#">186004439</a>	4.6 $\times$ 50 mm	<a href="#">186004451</a>
3.0 $\times$ 30 mm <i>XP</i>	<a href="#">186006080</a>	<a href="#">176002582</a>	4.6 $\times$ 100 mm	<a href="#">186004440</a>	4.6 $\times$ 100 mm	<a href="#">186004452</a>
3.0 $\times$ 50 mm <i>XP</i>	<a href="#">186006081</a>	<a href="#">176002583</a>	4.6 $\times$ 150 mm	<a href="#">186004441</a>	4.6 $\times$ 150 mm	<a href="#">186004453</a>
3.0 $\times$ 75 mm <i>XP</i>	<a href="#">186006082</a>	<a href="#">176002584</a>			4.6 $\times$ 250 mm	<a href="#">186004454</a>
3.0 $\times$ 100 mm <i>XP</i>	<a href="#">186006083</a>	<a href="#">176002585</a>				
3.0 $\times$ 150 mm <i>XP</i>	<a href="#">186006722</a>	<a href="#">176002888</a>				
4.6 $\times$ 30 mm <i>XP</i>	<a href="#">186006084</a>	—				
4.6 $\times$ 50 mm <i>XP</i>	<a href="#">186006085</a>	—				
4.6 $\times$ 75 mm <i>XP</i>	<a href="#">186006086</a>	—				
4.6 $\times$ 100 mm <i>XP</i>	<a href="#">186006087</a>	—				
4.6 $\times$ 150 mm <i>XP</i>	<a href="#">186006723</a>	—				

PREPARATIVE COLUMNS		
Particle Size: 5 $\mu\text{m}$		
Dimension	Type	P/N (1/pk)
10 $\times$ 10 mm	Guard Cartridge	<a href="#">186004720</a> <sup>1</sup>
10 $\times$ 50 mm	OBD Column	<a href="#">186008217</a>
10 $\times$ 100 mm	OBD Column	<a href="#">186008218</a>
19 $\times$ 10 mm	Guard Cartridge	<a href="#">186004723</a> <sup>2</sup>
19 $\times$ 50 mm	OBD Column	<a href="#">186004724</a>
19 $\times$ 100 mm	OBD Column	<a href="#">186004725</a>
19 $\times$ 150 mm	OBD Column	<a href="#">186004726</a>
19 $\times$ 250 mm	OBD Column	<a href="#">186004730</a>
30 $\times$ 10 mm	Guard Cartridge	<a href="#">186006896</a> <sup>3</sup>
30 $\times$ 50 mm	OBD Column	<a href="#">186004727</a>
30 $\times$ 100 mm	OBD Column	<a href="#">186004728</a>
30 $\times$ 150 mm	OBD Column	<a href="#">186004729</a>
30 $\times$ 250 mm	OBD Column	<a href="#">186004731</a>
50 $\times$ 50 mm	OBD Column	<a href="#">186004732</a>
50 $\times$ 100 mm	OBD Column	<a href="#">186004733</a>
50 $\times$ 150 mm	OBD Column	<a href="#">186004734</a>
50 $\times$ 250 mm	OBD Column	<a href="#">186004735</a>

<sup>1</sup> Requires 10  $\times$  10 mm Cartridge Holder, p/n: [289000779](#).

<sup>2</sup> Requires 19  $\times$  10 mm Cartridge Holder, p/n: [186000709](#).

<sup>3</sup> Requires 30  $\times$  10 mm Prep Guard Holder, p/n: [186006912](#).

XBridge Columns *Continued*

BEH Amide						
ANALYTICAL COLUMNS						
Particle Size: 2.5 $\mu$ m			Particle Size: 3.5 $\mu$ m		Particle Size: 5 $\mu$ m	
Dimension	P/N (1/pk)	P/N (3/pk)	Dimension	P/N (1/pk)	Dimension	P/N (1/pk)
2.1 $\times$ 30 mm <i>XP</i>	<a href="#">186006088</a>	<a href="#">176002586</a>	2.1 $\times$ 30 mm	<a href="#">186004858</a>	2.1 $\times$ 30 mm	<a href="#">186006587</a>
2.1 $\times$ 50 mm <i>XP</i>	<a href="#">186006089</a>	<a href="#">176002587</a>	2.1 $\times$ 50 mm	<a href="#">186004859</a>	2.1 $\times$ 50 mm	<a href="#">186006588</a>
2.1 $\times$ 75 mm <i>XP</i>	<a href="#">186006090</a>	<a href="#">176002588</a>	2.1 $\times$ 100 mm	<a href="#">186004860</a>	2.1 $\times$ 100 mm	<a href="#">186006589</a>
2.1 $\times$ 100 mm <i>XP</i>	<a href="#">186006091</a>	<a href="#">176002589</a>	2.1 $\times$ 150 mm	<a href="#">186004861</a>	2.1 $\times$ 150 mm	<a href="#">186006590</a>
2.1 $\times$ 150 mm <i>XP</i>	<a href="#">186006724</a>	<a href="#">176002889</a>	3.0 $\times$ 50 mm	<a href="#">186004863</a>	3.0 $\times$ 50 mm	<a href="#">186006591</a>
3.0 $\times$ 30 mm <i>XP</i>	<a href="#">186006092</a>	<a href="#">176002590</a>	3.0 $\times$ 100 mm	<a href="#">186004864</a>	3.0 $\times$ 100 mm	<a href="#">186006592</a>
3.0 $\times$ 50 mm <i>XP</i>	<a href="#">186006093</a>	<a href="#">176002591</a>	4.6 $\times$ 50 mm	<a href="#">186004867</a>	4.6 $\times$ 50 mm	<a href="#">186006593</a>
3.0 $\times$ 75 mm <i>XP</i>	<a href="#">186006094</a>	<a href="#">176002592</a>	4.6 $\times$ 100 mm	<a href="#">186004868</a>	4.6 $\times$ 100 mm	<a href="#">186006594</a>
3.0 $\times$ 100 mm <i>XP</i>	<a href="#">186006095</a>	<a href="#">176002593</a>	4.6 $\times$ 150 mm	<a href="#">186004869</a>	4.6 $\times$ 150 mm	<a href="#">186006595</a>
3.0 $\times$ 150 mm <i>XP</i>	<a href="#">186006725</a>	<a href="#">176002890</a>	4.6 $\times$ 250 mm	<a href="#">186004870</a>	4.6 $\times$ 250 mm	<a href="#">186006596</a>
4.6 $\times$ 30 mm <i>XP</i>	<a href="#">186006096</a>	—				
4.6 $\times$ 50 mm <i>XP</i>	<a href="#">186006097</a>	—				
4.6 $\times$ 75 mm <i>XP</i>	<a href="#">186006098</a>	—				
4.6 $\times$ 100 mm <i>XP</i>	<a href="#">186006099</a>	—				
4.6 $\times$ 150 mm <i>XP</i>	<a href="#">186006726</a>	—				

PREPARATIVE COLUMNS		
Particle Size: 5 $\mu$ m		
Dimension	Type	P/N (1/pk)
10 $\times$ 10 mm	Guard Cartridge	<a href="#">186006597</a> <sup>1</sup>
10 $\times$ 50 mm	OBD Column	<a href="#">186008260</a>
10 $\times$ 100 mm	OBD Column	<a href="#">186008261</a>
10 $\times$ 150 mm	OBD Column	<a href="#">186008262</a>
10 $\times$ 250 mm	OBD Column	<a href="#">186008263</a>
19 $\times$ 10 mm	Guard Cartridge	<a href="#">186006598</a> <sup>2</sup>
19 $\times$ 50 mm	OBD Column	<a href="#">186006603</a>
19 $\times$ 100 mm	OBD Column	<a href="#">186006604</a>
19 $\times$ 150 mm	OBD Column	<a href="#">186006605</a>
19 $\times$ 250 mm	OBD Column	<a href="#">186006606</a>
30 $\times$ 10 mm	Guard Cartridge	<a href="#">186006890</a> <sup>3</sup>
30 $\times$ 50 mm	OBD Column	<a href="#">186006607</a>
30 $\times$ 75 mm	OBD Column	<a href="#">186006608</a>
30 $\times$ 100 mm	OBD Column	<a href="#">186006609</a>
30 $\times$ 150 mm	OBD Column	<a href="#">186006610</a>
30 $\times$ 250 mm	OBD Column	<a href="#">186006611</a>

<sup>1</sup>Requires 10  $\times$  10 mm Cartridge Holder, p/n: [289000779](#).

<sup>2</sup>Requires 19  $\times$  10 mm Cartridge Holder, p/n: [186000709](#).

<sup>3</sup>Requires 30  $\times$  10 mm Prep Guard Holder, p/n: [186006912](#).

XBridge Columns *Continued*

Glycan BEH Amide, 130 Å	ANALYTICAL COLUMNS			
	Particle Size: 2.5 µm		Particle Size: 3.5 µm	
	Dimension	P/N (1/pk)	Dimension	P/N (1/pk)
	2.1 × 50 mm <i>XP</i>	<a href="#">186007263</a>	2.1 × 50 mm	<a href="#">186007502</a>
	2.1 × 100 mm <i>XP</i>	<a href="#">186007264</a>	2.1 × 100 mm	<a href="#">186007503</a>
	2.1 × 150 mm <i>XP</i>	<a href="#">186007265</a>	2.1 × 150 mm	<a href="#">186007504</a>
	3.0 × 30 mm <i>XP</i>	<a href="#">186008038</a>	4.6 × 50 mm	<a href="#">186007273</a>
	3.0 × 75 mm <i>XP</i>	<a href="#">186008039</a>	4.6 × 100 mm	<a href="#">186007274</a>
	3.0 × 150 mm <i>XP</i>	<a href="#">186008040</a>	4.6 × 150 mm	<a href="#">186007275</a>
	4.6 × 50 mm <i>XP</i>	<a href="#">186007268</a>	4.6 × 250 mm	<a href="#">186007276</a>
	4.6 × 100 mm <i>XP</i>	<a href="#">186007269</a>		
	4.6 × 150 mm <i>XP</i>	<a href="#">186007270</a>		

Peptide BEH C <sub>18</sub> , 130 Å	ANALYTICAL COLUMNS				PREPARATIVE COLUMNS					
	Particle Size: 3.5 µm		Particle Size: 5 µm		Particle Size: 5 µm			Particle Size: 10 µm		
	Dimension	P/N (1/pk)	Dimension	P/N (1/pk)	Dimension	Type	P/N (1/pk)	Dimension	Type	P/N (1/pk)
	1.0 × 50 mm	<a href="#">186003560</a>	1.0 × 50 mm	<a href="#">186003571</a>	10 × 10 mm	Guard Cartridge	<a href="#">186004469</a> <sup>1</sup>	4.6 × 50 mm	OBD Column	<a href="#">186003648</a>
	1.0 × 100 mm	<a href="#">186003561</a>	1.0 × 100 mm	<a href="#">186003572</a>	10 × 50 mm	OBD Column	<a href="#">186008186</a>	4.6 × 100 mm	OBD Column	<a href="#">186003649</a>
	1.0 × 150 mm	<a href="#">186003562</a>	1.0 × 150 mm	<a href="#">186003573</a>	10 × 100 mm	OBD Column	<a href="#">186008187</a>	4.6 × 150 mm	OBD Column	<a href="#">186003650</a>
	2.1 × 50 mm	<a href="#">186003563</a>	2.1 × 50 mm	<a href="#">186003574</a>	10 × 150 mm	OBD Column	<a href="#">186008188</a>	4.6 × 250 mm	OBD Column	<a href="#">186003651</a>
	2.1 × 100 mm	<a href="#">186003564</a>	2.1 × 100 mm	<a href="#">186003575</a>	10 × 250 mm	OBD Column	<a href="#">186008189</a>	10 × 10 mm	Guard Cartridge	<a href="#">186004465</a> <sup>1</sup>
	2.1 × 150 mm	<a href="#">186003565</a>	2.1 × 150 mm	<a href="#">186003576</a>	19 × 10 mm	Guard Cartridge	<a href="#">186004468</a> <sup>2</sup>	10 × 50 mm	OBD Column	<a href="#">186008194</a>
	2.1 × 250 mm	<a href="#">186003566</a>	2.1 × 250 mm	<a href="#">186003577</a>	19 × 50 mm	OBD Column	<a href="#">186003586</a>	10 × 100 mm	OBD Column	<a href="#">186008195</a>
	4.6 × 50 mm	<a href="#">186003567</a>	4.6 × 50 mm	<a href="#">186003578</a>	19 × 100 mm	OBD Column	<a href="#">186003587</a>	10 × 150 mm	OBD Column	<a href="#">186008196</a>
	4.6 × 100 mm	<a href="#">186003568</a>	4.6 × 100 mm	<a href="#">186003579</a>	19 × 150 mm	OBD Column	<a href="#">186003945</a>	10 × 250 mm	OBD Column	<a href="#">186008197</a>
	4.6 × 150 mm	<a href="#">186003569</a>	4.6 × 150 mm	<a href="#">186003580</a>				19 × 10 mm	Guard Cartridge	<a href="#">186004464</a> <sup>2</sup>
	4.6 × 250 mm	<a href="#">186003570</a>	4.6 × 250 mm	<a href="#">186003581</a>				19 × 50 mm	OBD Column	<a href="#">186003656</a>
								19 × 150 mm	OBD Column	<a href="#">186003657</a>
								19 × 250 mm	OBD Column	<a href="#">186003658</a>
								30 × 50 mm	OBD Column	<a href="#">186003659</a>
								30 × 100 mm	OBD Column	<a href="#">186003660</a>
								30 × 150 mm	OBD Column	<a href="#">186003661</a>
								30 × 250 mm	OBD Column	<a href="#">186003662</a>

<sup>1</sup>Requires 10 × 10 mm Cartridge Holder, p/n: [289000779](#).

<sup>2</sup>Requires 19 × 10 mm Cartridge Holder, p/n: [186000709](#).

XBridge Columns *Continued*

 Peptide BEH C<sub>18</sub>  
300 Å

ANALYTICAL COLUMNS						
Particle Size: 2.5 µm			Particle Size: 3.5 µm		Particle Size: 5 µm	
Dimension	P/N (1/pk)		Dimension	P/N (1/pk)		
2.1 × 30 mm <i>XP</i>	<a href="#">186006028</a>		1.0 × 50 mm	<a href="#">186003604</a>		
2.1 × 50 mm <i>XP</i>	<a href="#">186006029</a>		1.0 × 100 mm	<a href="#">186003605</a>		
2.1 × 75 mm <i>XP</i>	<a href="#">186006030</a>		1.0 × 150 mm	<a href="#">186003606</a>		
2.1 × 100 mm <i>XP</i>	<a href="#">186006031</a>		2.1 × 50 mm	<a href="#">186003607</a>		
2.1 × 150 mm <i>XP</i>	<a href="#">186006709</a>		2.1 × 100 mm	<a href="#">186003608</a>		
3.0 × 30 mm <i>XP</i>	<a href="#">186006032</a>		2.1 × 150 mm	<a href="#">186003609</a>		
3.0 × 50 mm <i>XP</i>	<a href="#">186006033</a>		2.1 × 250 mm	<a href="#">186003610</a>		
3.0 × 75 mm <i>XP</i>	<a href="#">186006034</a>		4.6 × 50 mm	<a href="#">186003611</a>		
3.0 × 100 mm <i>XP</i>	<a href="#">186006035</a>		4.6 × 100 mm	<a href="#">186003612</a>		
3.0 × 150 mm <i>XP</i>	<a href="#">186006710</a>		4.6 × 150 mm	<a href="#">186003613</a>		
4.6 × 30 mm <i>XP</i>	<a href="#">186006036</a>		4.6 × 250 mm	<a href="#">186003614</a>		
4.6 × 50 mm <i>XP</i>	<a href="#">186006037</a>					
4.6 × 75 mm <i>XP</i>	<a href="#">186006038</a>					
4.6 × 100 mm <i>XP</i>	<a href="#">186006039</a>					
4.6 × 150 mm <i>XP</i>	<a href="#">186006711</a>					

PREPARATIVE COLUMNS					
Particle Size: 5 µm			Particle Size: 10 µm		
Dimension	Type	P/N (1/pk)	Dimension	Type	P/N (1/pk)
10 × 10 mm	Guard Cartridge	<a href="#">186004471</a> <sup>1</sup>	4.6 × 50 mm	OBD Column	<a href="#">186003663</a>
10 × 50 mm	OBD Column	<a href="#">186008190</a>	4.6 × 100 mm	OBD Column	<a href="#">186003664</a>
10 × 100 mm	OBD Column	<a href="#">186008191</a>	4.6 × 150 mm	OBD Column	<a href="#">186003665</a>
10 × 150 mm	OBD Column	<a href="#">186008192</a>	4.6 × 250 mm	OBD Column	<a href="#">186003666</a>
10 × 250 mm	OBD Column	<a href="#">186008193</a>	10 × 10 mm	Guard Cartridge	<a href="#">186004467</a> <sup>1</sup>
19 × 10 mm	Guard Cartridge	<a href="#">186004470</a> <sup>2</sup>	10 × 50 mm	OBD Column	<a href="#">186008198</a>
19 × 50 mm	OBD Column	<a href="#">186003630</a>	10 × 100 mm	OBD Column	<a href="#">186008199</a>
19 × 100 mm	OBD Column	<a href="#">186003631</a>	10 × 150 mm	OBD Column	<a href="#">186008200</a>
19 × 150 mm	OBD Column	<a href="#">186003946</a>	10 × 250 mm	OBD Column	<a href="#">186008201</a>
			19 × 10 mm	Guard Cartridge	<a href="#">186004466</a> <sup>2</sup>
			19 × 50 mm	OBD Column	<a href="#">186003671</a>
			19 × 150 mm	OBD Column	<a href="#">186003672</a>
			19 × 250 mm	OBD Column	<a href="#">186003673</a>
			30 × 10 mm	Guard Cartridge	<a href="#">186006882</a> <sup>3</sup>
			30 × 50 mm	OBD Column	<a href="#">186003674</a>
			30 × 100 mm	OBD Column	<a href="#">186003675</a>
			30 × 150 mm	OBD Column	<a href="#">186003676</a>
			30 × 250 mm	OBD Column	<a href="#">186003677</a>

<sup>1</sup> Requires 10 × 10 mm Cartridge Holder, p/n: [289000779](#).

<sup>2</sup> Requires 19 × 10 mm Cartridge Holder, p/n: [186000709](#).

<sup>3</sup> Requires 30 × 10 mm Cartridge Holder, p/n: [186006912](#).

XBridge Columns *Continued*

Protein BEH C <sub>4</sub> , 300 Å	ANALYTICAL COLUMNS		PREPARATIVE COLUMNS					
	Particle Size: 3.5 µm		Particle Size: 5 µm			Particle Size: 10 µm		
	Dimension	P/N (1/pk)	Dimension	Type	P/N (1/pk)	Dimension	Type	P/N (1/pk)
	2.1 × 50 mm	<a href="#">186004498</a>	10 × 10 mm	Guard Cartridge	<a href="#">186007305</a> <sup>1</sup>	10 × 10 mm	Guard Cartridge	<a href="#">186007325</a> <sup>1</sup>
	2.1 × 100 mm	<a href="#">186004499</a>	10 × 50 mm	OBD Column	<a href="#">186008272</a>	10 × 50 mm	OBD Column	<a href="#">186008276</a>
	2.1 × 150 mm	<a href="#">186004500</a>	10 × 100 mm	OBD Column	<a href="#">186008273</a>	10 × 100 mm	OBD Column	<a href="#">186008277</a>
	2.1 × 250 mm	<a href="#">186004501</a>	10 × 150 mm	OBD Column	<a href="#">186008274</a>	10 × 150 mm	OBD Column	<a href="#">186008278</a>
	4.6 × 50 mm	<a href="#">186004502</a>	10 × 250 mm	OBD Column	<a href="#">186008275</a>	10 × 250 mm	OBD Column	<a href="#">186008279</a>
	4.6 × 100 mm	<a href="#">186004503</a>	19 × 10 mm	Guard Cartridge	<a href="#">186007310</a> <sup>2</sup>	19 × 10 mm	Guard Cartridge	<a href="#">186007330</a> <sup>2</sup>
	4.6 × 150 mm	<a href="#">186004504</a>	19 × 50 mm	OBD Column	<a href="#">186007311</a>	19 × 50 mm	OBD Column	<a href="#">186007331</a>
	4.6 × 250 mm	<a href="#">186004505</a>	19 × 100 mm	OBD Column	<a href="#">186007312</a>	19 × 100 mm	OBD Column	<a href="#">186007332</a>
			19 × 150 mm	OBD Column	<a href="#">186007313</a>	19 × 150 mm	OBD Column	<a href="#">186007333</a>
			19 × 250 mm	OBD Column	<a href="#">186007314</a>	19 × 250 mm	OBD Column	<a href="#">186007334</a>
			30 × 10 mm	Guard Cartridge	<a href="#">186007315</a> <sup>3</sup>	30 × 10 mm	Guard Cartridge	<a href="#">186007335</a> <sup>3</sup>
			30 × 50 mm	OBD Column	<a href="#">186007316</a>	30 × 50 mm	OBD Column	<a href="#">186007336</a>
			30 × 75 mm	OBD Column	<a href="#">186007317</a>	30 × 75 mm	OBD Column	<a href="#">186007337</a>
			30 × 100 mm	OBD Column	<a href="#">186007318</a>	30 × 100 mm	OBD Column	<a href="#">186007338</a>
			30 × 150 mm	OBD Column	<a href="#">186007319</a>	30 × 150 mm	OBD Column	<a href="#">186007339</a>
			30 × 250 mm	OBD Column	<a href="#">186007320</a>	30 × 250 mm	OBD Column	<a href="#">186007340</a>

Oligonucleotide BEH C <sub>18</sub> , 130 Å	PREPARATIVE COLUMNS		
	Particle Size: 2.5 µm		
	Dimension	Type	P/N (1/pk)
	10 × 50 mm	OBD Column	<a href="#">186008212</a>

<sup>1</sup>Requires 10 × 10 mm Cartridge Holder, p/n: [289000779](#).

<sup>2</sup>Requires 19 × 10 mm Cartridge Holder, p/n: [186000709](#).

<sup>3</sup>Requires 30 × 10 mm Prep Guard Holder, p/n: [186006912](#).

XBridge Columns Method Validation Kits\*

	Particle Size: 2.5 $\mu\text{m}$		Particle Size: 3.5 $\mu\text{m}$		Particle Size: 5 $\mu\text{m}$	
	Dimension	P/N (3/pk)	Dimension	P/N (3/pk)	Dimension	P/N (3/pk)
<b>BEH C<sub>8</sub></b>	2.1 $\times$ 50 mm <i>XP</i>	<a href="#">186006197</a>	2.1 $\times$ 100 mm	<a href="#">186003766</a>	2.1 $\times$ 150 mm	<a href="#">186003771</a>
	2.1 $\times$ 100 mm <i>XP</i>	<a href="#">186006198</a>	3.0 $\times$ 100 mm	<a href="#">186003767</a>	3.0 $\times$ 100 mm	<a href="#">186003772</a>
	2.1 $\times$ 150 mm <i>XP</i>	<a href="#">186006757</a>	3.0 $\times$ 150 mm	<a href="#">186003768</a>	3.0 $\times$ 150 mm	<a href="#">186003773</a>
	3.0 $\times$ 50 mm <i>XP</i>	<a href="#">186006199</a>	4.6 $\times$ 100 mm	<a href="#">186003769</a>	4.6 $\times$ 100 mm	<a href="#">186003774</a>
	3.0 $\times$ 100 mm <i>XP</i>	<a href="#">186006200</a>	4.6 $\times$ 150 mm	<a href="#">186003770</a>	4.6 $\times$ 150 mm	<a href="#">186003775</a>
	3.0 $\times$ 150 mm <i>XP</i>	<a href="#">186006758</a>			4.6 $\times$ 250 mm	<a href="#">186003776</a>
	4.6 $\times$ 50 mm <i>XP</i>	<a href="#">186006201</a>				
	4.6 $\times$ 100 mm <i>XP</i>	<a href="#">186006202</a>				
	4.6 $\times$ 150 mm <i>XP</i>	<a href="#">186006759</a>				
<b>BEH C<sub>6</sub></b>	2.1 $\times$ 50 mm <i>XP</i>	<a href="#">186006203</a>	2.1 $\times$ 100 mm	<a href="#">186003777</a>	2.1 $\times$ 150 mm	<a href="#">186003782</a>
	2.1 $\times$ 100 mm <i>XP</i>	<a href="#">186006204</a>	3.0 $\times$ 100 mm	<a href="#">186003778</a>	3.0 $\times$ 100 mm	<a href="#">186003783</a>
	2.1 $\times$ 150 mm <i>XP</i>	<a href="#">186006760</a>	3.0 $\times$ 150 mm	<a href="#">186003779</a>	3.0 $\times$ 150 mm	186003784
	3.0 $\times$ 50 mm <i>XP</i>	<a href="#">186006205</a>	4.6 $\times$ 100 mm	<a href="#">186003780</a>	4.6 $\times$ 100 mm	<a href="#">186003785</a>
	3.0 $\times$ 100 mm <i>XP</i>	<a href="#">186006206</a>	4.6 $\times$ 150 mm	<a href="#">186003781</a>	4.6 $\times$ 150 mm	<a href="#">186003786</a>
	3.0 $\times$ 150 mm <i>XP</i>	<a href="#">186006761</a>			4.6 $\times$ 250 mm	<a href="#">186003787</a>
	4.6 $\times$ 50 mm <i>XP</i>	<a href="#">186006207</a>				
	4.6 $\times$ 100 mm <i>XP</i>	<a href="#">186006208</a>				
	4.6 $\times$ 150 mm <i>XP</i>	<a href="#">186006762</a>				
<b>BEH Shield RP18</b>	2.1 $\times$ 50 mm <i>XP</i>	<a href="#">186006209</a>	2.1 $\times$ 100 mm	<a href="#">186003788</a>	2.1 $\times$ 150 mm	<a href="#">186003793</a>
	2.1 $\times$ 100 mm <i>XP</i>	<a href="#">186006210</a>	3.0 $\times$ 100 mm	<a href="#">186003789</a>	3.0 $\times$ 100 mm	186003794
	2.1 $\times$ 150 mm <i>XP</i>	<a href="#">186006763</a>	3.0 $\times$ 150 mm	<a href="#">186003790</a>	3.0 $\times$ 150 mm	<a href="#">186003795</a>
	3.0 $\times$ 50 mm <i>XP</i>	<a href="#">186006211</a>	4.6 $\times$ 100 mm	<a href="#">186003791</a>	4.6 $\times$ 100 mm	<a href="#">186003796</a>
	3.0 $\times$ 100 mm <i>XP</i>	<a href="#">186006212</a>	4.6 $\times$ 150 mm	<a href="#">186003792</a>	4.6 $\times$ 150 mm	<a href="#">186003797</a>
	3.0 $\times$ 150 mm <i>XP</i>	<a href="#">186006774</a>			4.6 $\times$ 250 mm	<a href="#">186003798</a>
	4.6 $\times$ 50 mm <i>XP</i>	<a href="#">186006213</a>				
	4.6 $\times$ 100 mm <i>XP</i>	<a href="#">186006214</a>				
	4.6 $\times$ 150 mm <i>XP</i>	<a href="#">186006775</a>				
<b>BEH Phenyl</b>	2.1 $\times$ 50 mm <i>XP</i>	<a href="#">186006215</a>	2.1 $\times$ 100 mm	<a href="#">186003799</a>	2.1 $\times$ 150 mm	<a href="#">186003804</a>
	2.1 $\times$ 100 mm <i>XP</i>	<a href="#">186006216</a>	3.0 $\times$ 100 mm	<a href="#">186003800</a>	3.0 $\times$ 100 mm	<a href="#">186003805</a>
	2.1 $\times$ 150 mm <i>XP</i>	<a href="#">186006776</a>	3.0 $\times$ 150 mm	<a href="#">186003801</a>	3.0 $\times$ 150 mm	186003806
	3.0 $\times$ 50 mm <i>XP</i>	<a href="#">186006217</a>	4.6 $\times$ 100 mm	<a href="#">186003802</a>	4.6 $\times$ 100 mm	<a href="#">186003807</a>
	3.0 $\times$ 100 mm <i>XP</i>	<a href="#">186006218</a>	4.6 $\times$ 150 mm	<a href="#">186003803</a>	4.6 $\times$ 150 mm	<a href="#">186003808</a>
	3.0 $\times$ 150 mm <i>XP</i>	<a href="#">186006777</a>			4.6 $\times$ 250 mm	<a href="#">186003809</a>
	4.6 $\times$ 50 mm <i>XP</i>	<a href="#">186006219</a>				
	4.6 $\times$ 100 mm <i>XP</i>	<a href="#">186006220</a>				
	4.6 $\times$ 150 mm <i>XP</i>	<a href="#">186006778</a>				
<b>Oligonucleotide BEH C<sub>18</sub>, 130 Å</b>	4.6 $\times$ 50 mm	<a href="#">186004906</a>				

\*Each Method Validation Kit contains 3 columns, each from a different batch.

XBridge Columns Method Validation Kits\* *Continued*

Particle Size: 2.5 $\mu$ m		
	Dimension	P/N (3/pk)
<b>HILIC</b>	2.1 $\times$ 50 mm <i>XP</i>	<a href="#">186006221</a>
	2.1 $\times$ 100 mm <i>XP</i>	<a href="#">186006222</a>
	2.1 $\times$ 150 mm <i>XP</i>	<a href="#">186006779</a>
	3.0 $\times$ 50 mm <i>XP</i>	<a href="#">186006223</a>
	3.0 $\times$ 100 mm <i>XP</i>	<a href="#">186006224</a>
	3.0 $\times$ 150 mm <i>XP</i>	<a href="#">186006780</a>
	4.6 $\times$ 50 mm <i>XP</i>	<a href="#">186006225</a>
	4.6 $\times$ 100 mm <i>XP</i>	<a href="#">186006226</a>
	4.6 $\times$ 150 mm <i>XP</i>	<a href="#">186006781</a>
<b>Amide</b>	2.1 $\times$ 50 mm <i>XP</i>	<a href="#">186006227</a>
	2.1 $\times$ 100 mm <i>XP</i>	<a href="#">186006228</a>
	2.1 $\times$ 150 mm <i>XP</i>	<a href="#">186006782</a>
	3.0 $\times$ 50 mm <i>XP</i>	<a href="#">186006229</a>
	3.0 $\times$ 100 mm <i>XP</i>	<a href="#">186006230</a>
	3.0 $\times$ 150 mm <i>XP</i>	<a href="#">186006783</a>
	4.6 $\times$ 50 mm <i>XP</i>	<a href="#">186006231</a>
	4.6 $\times$ 100 mm <i>XP</i>	<a href="#">186006232</a>
	4.6 $\times$ 150 mm <i>XP</i>	<a href="#">186006784</a>
<b>Glycan BEH Amide, 130 Å</b>	2.1 $\times$ 150 mm <i>XP</i>	<a href="#">186007266</a>
	4.6 $\times$ 150 mm <i>XP</i>	<a href="#">186007271</a>

\*Each Method Validation Kit contains 3 columns, each from a different batch.



## XBridge VanGuard Cartridges\*

	Particle Size: 2.5 $\mu$ m		Particle Size: 3.5 $\mu$ m		Particle Size: 5 $\mu$ m	
	Dimension	P/N (3/pk)	Dimension	P/N (3/pk)	Dimension	P/N (3/pk)
BEH C <sub>8</sub>	2.1 $\times$ 5 mm <i>XP</i>	<a href="#">186007772</a>	2.1 $\times$ 5 mm	<a href="#">186007766</a>	2.1 $\times$ 5 mm	<a href="#">186007769</a>
	3.9 $\times$ 5 mm <i>XP</i>	<a href="#">186007774</a>	3.9 $\times$ 5 mm	<a href="#">186007768</a>	3.9 $\times$ 5 mm	<a href="#">186007771</a>
BEH C <sub>8</sub>	2.1 $\times$ 5 mm <i>XP</i>	<a href="#">186007781</a>	2.1 $\times$ 5 mm	<a href="#">186007775</a>	2.1 $\times$ 5 mm	<a href="#">186007778</a>
	3.9 $\times$ 5 mm <i>XP</i>	<a href="#">186007783</a>	3.9 $\times$ 5 mm	<a href="#">186007777</a>	3.9 $\times$ 5 mm	<a href="#">186007780</a>
BEH Shield RP18	2.1 $\times$ 5 mm <i>XP</i>	<a href="#">186007808</a>	2.1 $\times$ 5 mm	<a href="#">186007802</a>	2.1 $\times$ 5 mm	<a href="#">186007805</a>
	3.9 $\times$ 5 mm <i>XP</i>	<a href="#">186007810</a>	3.9 $\times$ 5 mm	<a href="#">186007804</a>	3.9 $\times$ 5 mm	<a href="#">186007807</a>
BEH Phenyl	2.1 $\times$ 5 mm <i>XP</i>	<a href="#">186007799</a>	2.1 $\times$ 5 mm	<a href="#">186007793</a>	2.1 $\times$ 5 mm	<a href="#">186007796</a>
	3.9 $\times$ 5 mm <i>XP</i>	<a href="#">186007801</a>	3.9 $\times$ 5 mm	<a href="#">186007795</a>	3.9 $\times$ 5 mm	<a href="#">186007798</a>
BEH HILIC	2.1 $\times$ 5 mm <i>XP</i>	<a href="#">186007790</a>	2.1 $\times$ 5 mm	<a href="#">186007784</a>	2.1 $\times$ 5 mm	<a href="#">186007787</a>
	3.9 $\times$ 5 mm <i>XP</i>	<a href="#">186007792</a>	3.9 $\times$ 5 mm	<a href="#">186007786</a>	3.9 $\times$ 5 mm	<a href="#">186007789</a>
BEH Amide	2.1 $\times$ 5 mm <i>XP</i>	<a href="#">186007763</a>	2.1 $\times$ 5 mm	<a href="#">186007757</a>	2.1 $\times$ 5 mm	<a href="#">186007760</a>
	3.9 $\times$ 5 mm <i>XP</i>	<a href="#">186007765</a>	3.9 $\times$ 5 mm	<a href="#">186007759</a>	3.9 $\times$ 5 mm	<a href="#">186007762</a>

\*Each cartridge listed requires use of Universal VanGuard Cartridge Holder (Listed below, p/n [186007949](#))

## Universal VanGuard Cartridge Holder

Description	P/N (1/pk)
Universal VanGuard Cartridge Holder	<a href="#">186007949</a>



**APPLICATION AREA:** Pharmaceutical Analysis

"Column protection products are very useful for samples with significant residual matrix, even after the use of small micron filtration. They are especially useful for UPLC, where column frits are much smaller than in traditional HPLC."

**REVIEWER:** Barrett Remington

**ORGANIZATION:** Particle Sciences, Inc.

XSelect HPLC Columns are designed for the method-development scientist who requires a diverse selection of sorbents to easily separate the most difficult analyte co-elutions.

XSelect Columns are:

- Designed for selectivity, improving the separation of closely eluting peaks
- Intended for isolation and purification, loading the highest analyte mass of any columns
- Ideal for rapid method development, reducing the time and cost spent developing methods



The base particle or substrate critically influences analyte selectivity; the bonded ligand influences selectivity to a lesser extent. Neither the substrate nor the ligand alone provides dramatic selectivity changes. Yet in combination, they provide the ultimate means of enhancing analyte selectivity, while ensuring reproducible and robust methods. Accordingly, the XSelect Column family offers the unique optimization of bonded ligands embodied in the particle technologies of high strength silica (HSS) and charged surface hybrid (CSH).

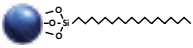
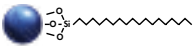
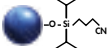
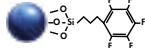
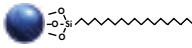
## Column Characteristics

	CSH C <sub>18</sub> , 130 Å	CSH Fluoro-Phenyl, 130 Å	CSH Phenyl-Hexyl, 130 Å	Peptide CSH C <sub>18</sub> , 130A
	UHPLC: 2.5 µm XP HPLC: 3.5, 5, 10 µm	UHPLC: 2.5 µm XP HPLC: 3.5, 5 µm	UHPLC: 2.5 µm XP HPLC: 3.5, 5 µm	UHPLC: 2.5 µm XP HPLC: 3.5, 5 µm
Ligand Benefits	General purpose with excellent pH stability and rapid mobile-phase re-equilibration. Yields superior peak shape and increased loading capacity for basic compounds.	General purpose, provides a very high degree of analyte selectivity, especially in low-pH mobile phases. Provides superior peak shape and increased loading capacity for acidic compounds.	General purpose and alternative selectivity versus C <sub>18</sub> . Provides excellent retention for polyaromatic compounds. Maintains excellent reproducibility at pH extremes and delivers superior peak shape and increased loading capacity for basic compounds.	General purpose, offers excellent pH stability and peak shape for basic peptides in low ionic strength mobile phases.
Particle/Ligand				
Ligand Density*	2.3 µmol/m <sup>2</sup>	2.3 µmol/m <sup>2</sup>	2.3 µmol/m <sup>2</sup>	2.3 µmol/m <sup>2</sup>
Carbon Load*	15%	10%	14%	15%
Endcapped	Yes	No	Yes	Yes
USP Class No.	L1	L43	L11	L1
pH Range	1-11	1-8	1-11	1-11
Temperature Limits	Low pH = 80 °C, High pH = 45 °C	Low pH = 60 °C, High pH = 45 °C	Low pH = 80 °C, High pH = 45 °C	Low pH = 80 °C, High pH = 45 °C
Surface Area*	185 m <sup>2</sup> /g	185 m <sup>2</sup> /g	185 m <sup>2</sup> /g	185 m <sup>2</sup> /g
Performance Standards	Neutrals QC Reference Material p/n: <a href="#">186006360</a>	Neutrals QC Reference Material p/n: <a href="#">186006360</a>	Neutrals QC Reference Material p/n: <a href="#">186006360</a>	Cytochrome c Digestion Standard p/n: <a href="#">186006371</a>
Application Standards	Reversed-Phase QC Reference Material p/n: <a href="#">186006363</a>	Reversed-Phase QC Reference Material p/n: <a href="#">186006363</a>	Reversed-Phase QC Reference Material p/n: <a href="#">186006363</a>	Peptide Retention Standard p/n: <a href="#">186006555</a>

\*Expected or approximate value.

XSelect Columns are also available in UPLC particle sizes (ACQUITY UPLC CSH and ACQUITY UPLC HSS), please refer to pages 113 and 120.

Column Characteristics *Continued*

	HSS C <sub>18</sub> <sup>SR</sup> , 130 Å	HSS C <sub>18</sub> SB, 130 Å	HSS CN, 130 Å	HSS PFP, 130 Å	HSS T3, 130 Å
	UHPLC: 2.5 µm <i>XP</i> HPLC: 3.5, 5 µm	UHPLC: 2.5 µm <i>XP</i> HPLC: 3.5, 5 µm	UHPLC: 2.5 µm <i>XP</i> HPLC: 3.5, 5 µm	UHPLC: 2.5 µm <i>XP</i> HPLC: 3.5, 5 µm	UHPLC: 2.5 µm <i>XP</i> HPLC: 3.5, 5 µm
Ligand Benefits	Ultra performance and general purpose, provides increased retention, superior peak shape and resists acid hydrolysis at low pH.	Provides unique selectivity for bases when operating in low-pH conditions.	General purpose, shows contrasting analyte selectivity when compared to C <sub>18</sub> phases, can be used in either reversed-phase and normal-phase mode.	General purpose, maximizes selectivity differences for Lewis bases through pi-pi interactions. The rigid aromatic ring provides additional selectivity based on shape, dipole moment, and hydrogen bonding interactions.	Exceptional polar compound retention and aqueous mobile-phase compatible.
Particle/Ligand					
Ligand Density*	3.2 µmol/m <sup>2</sup>	1.6 µmol/m <sup>2</sup>	2.0 µmol/m <sup>2</sup>	3.2 µmol/m <sup>2</sup>	1.6 µmol/m <sup>2</sup>
Carbon Load*	15%	8%	5%	7%	11%
Endcapped	Yes	No	No	No	Yes
USP Class No.	L1	L1	L10	L43	L1
pH Range	1–8	2–8	2–8	2–8	2–8
Temperature Limits	Low pH = 45 °C, High pH = 45 °C	Low pH = 45 °C, High pH = 45 °C	Low pH = 45 °C, High pH = 45 °C	Low pH = 45 °C, High pH = 45 °C	Low pH = 45 °C, High pH = 45 °C
Surface Area*	230 m <sup>2</sup> /g	230 m <sup>2</sup> /g	230 m <sup>2</sup> /g	230 m <sup>2</sup> /g	230 m <sup>2</sup> /g
Performance Standards	Neutrals QC Reference Material p/n: <a href="#">186006360</a>	Neutrals QC Reference Material p/n: <a href="#">186006360</a>	Neutrals QC Reference Material p/n: <a href="#">186006360</a>	Neutrals QC Reference Material p/n: <a href="#">186006360</a>	Neutrals QC Reference Material p/n: <a href="#">186006360</a>
Application Standards	Reversed-Phase QC Reference Material p/n: <a href="#">186006363</a>	Reversed-Phase QC Reference Material p/n: <a href="#">186006363</a>	—	Reversed-Phase QC Reference Material p/n: <a href="#">186006363</a>	Reversed-Phase QC Reference Material p/n: <a href="#">186006363</a>

\*Expected or approximate value.

XSelect Columns

ANALYTICAL COLUMNS						
Particle Size: 2.5 µm			Particle Size: 3.5 µm		Particle Size: 5 µm	
Dimension	P/N (1/pk)	P/N (3/pk)	Dimension	P/N (1/pk)	Dimension	P/N (1/pk)
2.1 × 30 mm <i>XP</i>	<a href="#">186006100</a>	<a href="#">176002594</a>	1.0 × 50 mm	<a href="#">186005249</a>	2.1 × 50 mm	<a href="#">186005274</a>
2.1 × 50 mm <i>XP</i>	<a href="#">186006101</a>	<a href="#">176002595</a>	1.0 × 150 mm	<a href="#">186005251</a>	2.1 × 100 mm	<a href="#">186005275</a>
2.1 × 75 mm <i>XP</i>	<a href="#">186006102</a>	<a href="#">176002596</a>	2.1 × 30 mm	<a href="#">186005254</a>	2.1 × 150 mm	<a href="#">186005276</a>
2.1 × 100 mm <i>XP</i>	<a href="#">186006103</a>	<a href="#">176002597</a>	2.1 × 50 mm	<a href="#">186005255</a>	3.0 × 30 mm	<a href="#">186005279</a>
2.1 × 150 mm <i>XP</i>	<a href="#">186006727</a>	<a href="#">176002891</a>	2.1 × 75 mm	<a href="#">186005644</a>	3.0 × 50 mm	<a href="#">186005280</a>
3.0 × 30 mm <i>XP</i>	<a href="#">186006104</a>	<a href="#">176002598</a>	2.1 × 100 mm	<a href="#">186005256</a>	3.0 × 100 mm	<a href="#">186005281</a>
3.0 × 50 mm <i>XP</i>	<a href="#">186006105</a>	<a href="#">176002599</a>	2.1 × 150 mm	<a href="#">186005257</a>	3.0 × 150 mm	<a href="#">186005282</a>
3.0 × 75 mm <i>XP</i>	<a href="#">186006106</a>	<a href="#">176002600</a>	3.0 × 30 mm	<a href="#">186005260</a>	3.0 × 250 mm	<a href="#">186005283</a>
3.0 × 100 mm <i>XP</i>	<a href="#">186006107</a>	<a href="#">176002601</a>	3.0 × 50 mm	<a href="#">186005261</a>	4.6 × 50 mm	<a href="#">186005287</a>
3.0 × 150 mm <i>XP</i>	<a href="#">186006728</a>	<a href="#">176002892</a>	3.0 × 75 mm	<a href="#">186005647</a>	4.6 × 100 mm	<a href="#">186005289</a>
4.6 × 30 mm <i>XP</i>	<a href="#">186006108</a>	—	3.0 × 100 mm	<a href="#">186005262</a>	4.6 × 150 mm	<a href="#">186005290</a>
4.6 × 50 mm <i>XP</i>	<a href="#">186006109</a>	—	3.0 × 150 mm	<a href="#">186005263</a>	4.6 × 250 mm	<a href="#">186005291</a>
4.6 × 75 mm <i>XP</i>	<a href="#">186006110</a>	—	4.6 × 50 mm	<a href="#">186005267</a>		
4.6 × 100 mm <i>XP</i>	<a href="#">186006111</a>	—	4.6 × 75 mm	<a href="#">186005268</a>		
4.6 × 150 mm <i>XP</i>	<a href="#">186006729</a>	—	4.6 × 100 mm	<a href="#">186005269</a>		
			4.6 × 150 mm	<a href="#">186005270</a>		

PREPARATIVE COLUMNS					
Particle Size: 5 µm			Particle Size: 10 µm		
Dimension	Type	P/N (1/pk)	Dimension	Type	P/N (1/pk)
10 × 10 mm	Guard Cartridge	<a href="#">186005491</a> <sup>1</sup>	Guard Cartridge	10 × 10 mm	<a href="#">186007285</a>
10 × 50 mm	OBD Column	<a href="#">186008236</a>	OBD Column	10 × 50 mm	<a href="#">186008268</a>
10 × 100 mm	OBD Column	<a href="#">186008237</a>	OBD Column	10 × 100 mm	<a href="#">186008269</a>
10 × 150 mm	OBD Column	<a href="#">186008238</a>	OBD Column	10 × 150 mm	<a href="#">186008270</a>
10 × 250 mm	OBD Column	<a href="#">186008239</a>	OBD Column	10 × 250 mm	<a href="#">186008271</a>
19 × 10 mm	Guard Cartridge	<a href="#">186005418</a> <sup>2</sup>	Guard Cartridge	19 × 10 mm	<a href="#">186007290</a>
19 × 50 mm	OBD Column	<a href="#">186005420</a>	OBD Column	19 × 50 mm	<a href="#">186007291</a>
19 × 100 mm	OBD Column	<a href="#">186005421</a>	OBD Column	19 × 100 mm	<a href="#">186007292</a>
19 × 150 mm	OBD Column	<a href="#">186005422</a>	OBD Column	19 × 150 mm	<a href="#">186007293</a>
19 × 250 mm	OBD Column	<a href="#">186005492</a>	OBD Column	19 × 250 mm	<a href="#">186007294</a>
30 × 10 mm	Guard Cartridge	<a href="#">186006899</a> <sup>3</sup>	Guard Cartridge	30 × 10 mm	<a href="#">186007295</a>
30 × 50 mm	OBD Column	<a href="#">186005423</a>	OBD Column	30 × 50 mm	<a href="#">186007296</a>
30 × 75 mm	OBD Column	<a href="#">186005424</a>	OBD Column	30 × 75 mm	<a href="#">186007297</a>
30 × 100 mm	OBD Column	<a href="#">186005425</a>	OBD Column	30 × 100 mm	<a href="#">186007298</a>
30 × 150 mm	OBD Column	<a href="#">186005426</a>	OBD Column	30 × 150 mm	<a href="#">186007299</a>
30 × 250 mm	OBD Column	<a href="#">186005493</a>	OBD Column	30 × 250 mm	<a href="#">186007300</a>
50 × 50 mm	OBD Column	<a href="#">186005494</a>	OBD Column	50 × 50 mm	<a href="#">186007301</a>
50 × 100 mm	OBD Column	<a href="#">186005495</a>	OBD Column	50 × 100 mm	<a href="#">186007302</a>
50 × 150 mm	OBD Column	<a href="#">186005496</a>	OBD Column	50 × 150 mm	<a href="#">186007303</a>
50 × 250 mm	OBD Column	<a href="#">186005497</a>	OBD Column	50 × 250 mm	<a href="#">186007304</a>

<sup>1</sup> Requires 10 × 10 mm Cartridge Holder, p/n: [289000779](#).

<sup>2</sup> Requires 19 × 10 mm Cartridge Holder, p/n: [186000709](#).

<sup>3</sup> Requires 30 × 10 mm Prep Guard Holder, p/n: [186006912](#).

XSelect Columns *Continued*

CSH Fluoro-Phenyl	ANALYTICAL COLUMNS						
	Particle Size: 2.5 µm			Particle Size: 3.5 µm		Particle Size: 5 µm	
	Dimension	P/N (1/pk)	P/N (3/pk)	Dimension	P/N (1/pk)	Dimension	P/N (1/pk)
	2.1 × 30 mm <i>XP</i>	<a href="#">186006112</a>	<a href="#">176002602</a>	2.1 × 50 mm	<a href="#">186005310</a>	2.1 × 50 mm	<a href="#">186005329</a>
	2.1 × 50 mm <i>XP</i>	<a href="#">186006113</a>	<a href="#">176002603</a>	2.1 × 75 mm	<a href="#">186005646</a>	2.1 × 100 mm	<a href="#">186005330</a>
	2.1 × 75 mm <i>XP</i>	<a href="#">186006114</a>	<a href="#">176002604</a>	2.1 × 100 mm	<a href="#">186005311</a>	2.1 × 150 mm	<a href="#">186005331</a>
	2.1 × 100 mm <i>XP</i>	<a href="#">186006115</a>	<a href="#">176002605</a>	2.1 × 150 mm	<a href="#">186005312</a>	3.0 × 50 mm	<a href="#">186005335</a>
	2.1 × 150 mm <i>XP</i>	<a href="#">186006730</a>	<a href="#">176002893</a>	3.0 × 50 mm	<a href="#">186005316</a>	3.0 × 100 mm	<a href="#">186005336</a>
	3.0 × 30 mm <i>XP</i>	<a href="#">186006116</a>	<a href="#">176002606</a>	3.0 × 75 mm	<a href="#">186005649</a>	3.0 × 150 mm	<a href="#">186005337</a>
	3.0 × 50 mm <i>XP</i>	<a href="#">186006117</a>	<a href="#">176002607</a>	3.0 × 100 mm	<a href="#">186005317</a>	3.0 × 250 mm	<a href="#">186005338</a>
	3.0 × 75 mm <i>XP</i>	<a href="#">186006118</a>	<a href="#">176002608</a>	3.0 × 150 mm	<a href="#">186005318</a>	4.6 × 50 mm	<a href="#">186005342</a>
	3.0 × 100 mm <i>XP</i>	<a href="#">186006119</a>	<a href="#">176002609</a>	4.6 × 50 mm	<a href="#">186005322</a>	4.6 × 75 mm	<a href="#">186005343</a>
	3.0 × 150 mm <i>XP</i>	<a href="#">186006731</a>	<a href="#">176002894</a>	4.6 × 75 mm	<a href="#">186005323</a>	4.6 × 100 mm	<a href="#">186005344</a>
	4.6 × 30 mm <i>XP</i>	<a href="#">186006120</a>	—	4.6 × 100 mm	<a href="#">186005324</a>	4.6 × 150 mm	<a href="#">186005345</a>
	4.6 × 50 mm <i>XP</i>	<a href="#">186006121</a>	—	4.6 × 150 mm	<a href="#">186005325</a>	4.6 × 250 mm	<a href="#">186005346</a>
	4.6 × 75 mm <i>XP</i>	<a href="#">186006122</a>	—				
	4.6 × 100 mm <i>XP</i>	<a href="#">186006123</a>	—				
	4.6 × 150 mm <i>XP</i>	<a href="#">186006732</a>	—				

PREPARATIVE COLUMNS		
Particle Size: 5 µm		
Dimension	Type	P/N (1/pk)
10 × 10 mm	Guard Cartridge	<a href="#">186005498</a> <sup>1</sup>
10 × 50 mm	OBD Column	<a href="#">186008240</a>
10 × 100 mm	OBD Column	<a href="#">186008241</a>
10 × 150 mm	OBD Column	<a href="#">186008242</a>
10 × 250 mm	OBD Column	<a href="#">186008243</a>
19 × 10 mm	Guard Cartridge	<a href="#">186005431</a> <sup>2</sup>
19 × 50 mm	OBD Column	<a href="#">186005433</a>
19 × 100 mm	OBD Column	<a href="#">186005434</a>
19 × 150 mm	OBD Column	<a href="#">186005435</a>
19 × 250 mm	OBD Column	<a href="#">186005499</a>
30 × 10 mm	Guard Cartridge	<a href="#">186006900</a> <sup>3</sup>
30 × 50 mm	OBD Column	<a href="#">186005436</a>
30 × 75 mm	OBD Column	<a href="#">186005437</a>
30 × 100 mm	OBD Column	<a href="#">186005438</a>
30 × 150 mm	OBD Column	<a href="#">186005439</a>
30 × 250 mm	OBD Column	<a href="#">186005500</a>
50 × 50 mm	OBD Column	<a href="#">186005501</a>
50 × 100 mm	OBD Column	<a href="#">186005502</a>
50 × 150 mm	OBD Column	<a href="#">186005503</a>
50 × 250 mm	OBD Column	<a href="#">186005504</a>

<sup>1</sup>Requires 10 × 10 mm Cartridge Holder, p/n: [289000779](#).

<sup>2</sup>Requires 19 × 10 mm Cartridge Holder, p/n: [186000709](#).

<sup>3</sup>Requires 30 × 10 mm Prep Guard Holder, p/n: [186006912](#).

XSelect Columns *Continued*

CSH Phenyl-Hexyl	ANALYTICAL COLUMNS					
	Particle Size: 2.5 µm			Particle Size: 3.5 µm		Particle Size: 5 µm
	Dimension	P/N (1/pk)	P/N (3/pk)	Dimension	P/N (1/pk)	Dimension
2.1 × 30 mm <i>XP</i>	<a href="#">186006124</a>	<a href="#">176002610</a>	2.1 × 50 mm	<a href="#">186005365</a>	2.1 × 50 mm	<a href="#">186005384</a>
2.1 × 50 mm <i>XP</i>	<a href="#">186006125</a>	<a href="#">176002611</a>	2.1 × 75 mm	<a href="#">186005645</a>	2.1 × 100 mm	<a href="#">186005385</a>
2.1 × 75 mm <i>XP</i>	<a href="#">186006126</a>	<a href="#">176002612</a>	2.1 × 100 mm	<a href="#">186005366</a>	2.1 × 150 mm	<a href="#">186005386</a>
2.1 × 100 mm <i>XP</i>	<a href="#">186006127</a>	<a href="#">176002613</a>	2.1 × 150 mm	<a href="#">186005367</a>	3.0 × 50 mm	<a href="#">186005390</a>
2.1 × 150 mm <i>XP</i>	<a href="#">186006733</a>	<a href="#">176002895</a>	3.0 × 50 mm	<a href="#">186005371</a>	3.0 × 100 mm	<a href="#">186005391</a>
3.0 × 30 mm <i>XP</i>	<a href="#">186006128</a>	<a href="#">176002614</a>	3.0 × 75 mm	<a href="#">186005648</a>	3.0 × 150 mm	<a href="#">186005392</a>
3.0 × 50 mm <i>XP</i>	<a href="#">186006129</a>	<a href="#">176002615</a>	3.0 × 100 mm	<a href="#">186005372</a>	3.0 × 250 mm	<a href="#">186005393</a>
3.0 × 75 mm <i>XP</i>	<a href="#">186006130</a>	<a href="#">176002616</a>	3.0 × 150 mm	<a href="#">186005373</a>	4.6 × 50 mm	<a href="#">186005397</a>
3.0 × 100 mm <i>XP</i>	<a href="#">186006131</a>	<a href="#">176002617</a>	4.6 × 50 mm	<a href="#">186005377</a>	4.6 × 75 mm	<a href="#">186005398</a>
3.0 × 150 mm <i>XP</i>	<a href="#">186006734</a>	<a href="#">176002896</a>	4.6 × 75 mm	<a href="#">186005378</a>	4.6 × 100 mm	<a href="#">186005399</a>
4.6 × 30 mm <i>XP</i>	<a href="#">186006132</a>	—	4.6 × 100 mm	<a href="#">186005379</a>	4.6 × 150 mm	<a href="#">186005400</a>
4.6 × 50 mm <i>XP</i>	<a href="#">186006133</a>	—	4.6 × 150 mm	<a href="#">186005380</a>	4.6 × 250 mm	<a href="#">186005401</a>
4.6 × 75 mm <i>XP</i>	<a href="#">186006134</a>	—				
4.6 × 100 mm <i>XP</i>	<a href="#">186006135</a>	—				
4.6 × 150 mm <i>XP</i>	<a href="#">186006735</a>	—				

PREPARATIVE COLUMNS		
Particle Size: 5 µm		
Dimension	Type	P/N (1/pk)
10 × 10 mm	Guard Cartridge	<a href="#">186005505</a> <sup>1</sup>
10 × 50 mm	OBD Column	<a href="#">186008244</a>
10 × 100 mm	OBD Column	<a href="#">186008245</a>
10 × 150 mm	OBD Column	<a href="#">186008246</a>
10 × 250 mm	OBD Column	<a href="#">186008247</a>
19 × 10 mm	Guard Cartridge	<a href="#">186005444</a> <sup>2</sup>
19 × 50 mm	OBD Column	<a href="#">186005446</a>
19 × 100 mm	OBD Column	<a href="#">186005447</a>
19 × 150 mm	OBD Column	<a href="#">186005448</a>
19 × 250 mm	OBD Column	<a href="#">186005506</a>
30 × 10 mm	Guard Cartridge	<a href="#">186006901</a> <sup>3</sup>
30 × 50 mm	OBD Column	<a href="#">186005520</a>
30 × 75 mm	OBD Column	<a href="#">186005450</a>
30 × 100 mm	OBD Column	<a href="#">186005451</a>
30 × 150 mm	OBD Column	<a href="#">186005452</a>
30 × 250 mm	OBD Column	<a href="#">186005507</a>
50 × 50 mm	OBD Column	<a href="#">186005508</a>
50 × 100 mm	OBD Column	<a href="#">186005509</a>
50 × 150 mm	OBD Column	<a href="#">186005510</a>
50 × 250 mm	OBD Column	<a href="#">186005511</a>

<sup>1</sup>Requires 10 × 10 mm Cartridge Holder, p/n: [289000779](#).

<sup>2</sup>Requires 19 × 10 mm Cartridge Holder, p/n: [186000709](#).

<sup>3</sup>Requires 30 × 10 mm Prep Guard Holder, p/n: [186006912](#).

XSelect Columns *Continued*

HSS C <sub>18</sub> ANALYTICAL COLUMNS						
Particle Size: 2.5 µm			Particle Size: 3.5 µm		Particle Size: 5 µm	
Dimension	P/N (1/pk)	P/N (3/pk)	Dimension	P/N (1/pk)	Dimension	P/N (1/pk)
2.1 × 30 mm <i>XP</i>	<a href="#">186006136</a>	<a href="#">176002618</a>	2.1 × 30 mm	<a href="#">186006380</a>	2.1 × 50 mm	<a href="#">186006391</a>
2.1 × 50 mm <i>XP</i>	<a href="#">186006137</a>	<a href="#">176002619</a>	2.1 × 50 mm	<a href="#">186006381</a>	2.1 × 100 mm	<a href="#">186006392</a>
2.1 × 75 mm <i>XP</i>	<a href="#">186006138</a>	<a href="#">176002620</a>	2.1 × 75 mm	<a href="#">186006382</a>	2.1 × 150 mm	<a href="#">186006393</a>
2.1 × 100 mm <i>XP</i>	<a href="#">186006139</a>	<a href="#">176002621</a>	2.1 × 100 mm	<a href="#">186006383</a>	3.0 × 50 mm	<a href="#">186006396</a>
2.1 × 150 mm <i>XP</i>	<a href="#">186006736</a>	<a href="#">176002897</a>	2.1 × 150 mm	<a href="#">186006384</a>	3.0 × 100 mm	<a href="#">186006397</a>
3.0 × 30 mm <i>XP</i>	<a href="#">186006140</a>	<a href="#">176002622</a>	3.0 × 30 mm	<a href="#">186004765</a>	3.0 × 150 mm	<a href="#">186006398</a>
3.0 × 50 mm <i>XP</i>	<a href="#">186006141</a>	<a href="#">176002623</a>	3.0 × 50 mm	<a href="#">186004766</a>	3.0 × 250 mm	<a href="#">186006399</a>
3.0 × 75 mm <i>XP</i>	<a href="#">186006142</a>	<a href="#">176002624</a>	3.0 × 75 mm	<a href="#">186005642</a>	4.6 × 50 mm	<a href="#">186004852</a>
3.0 × 100 mm <i>XP</i>	<a href="#">186006143</a>	<a href="#">176002625</a>	3.0 × 100 mm	<a href="#">186004762</a>	4.6 × 75 mm	<a href="#">186006402</a>
3.0 × 150 mm <i>XP</i>	<a href="#">186006737</a>	<a href="#">176002898</a>	3.0 × 150 mm	<a href="#">186004763</a>	4.6 × 100 mm	<a href="#">186006403</a>
4.6 × 30 mm <i>XP</i>	<a href="#">186006144</a>	—	4.6 × 50 mm	<a href="#">186004772</a>	4.6 × 150 mm	<a href="#">186004773</a>
4.6 × 50 mm <i>XP</i>	<a href="#">186006145</a>	—	4.6 × 75 mm	<a href="#">186006387</a>	4.6 × 250 mm	<a href="#">186004775</a>
4.6 × 75 mm <i>XP</i>	<a href="#">186006146</a>	—	4.6 × 100 mm	<a href="#">186004767</a>		
4.6 × 100 mm <i>XP</i>	<a href="#">186006147</a>	—	4.6 × 150 mm	<a href="#">186004768</a>		
4.6 × 150 mm <i>XP</i>	<a href="#">186006738</a>	—	4.6 × 250 mm	<a href="#">186004770</a>		

PREPARATIVE COLUMNS					
Particle Size: 5 µm			Particle Size: 5 µm		
Dimension	Type	P/N (1/pk)	Dimension	Type	P/N (1/pk)
10 × 10 mm	Guard Cartridge	<a href="#">186004776</a> <sup>1</sup>	10 × 100 mm	OBD Column	<a href="#">186008223</a>
10 × 50 mm	OBD Column	<a href="#">186008222</a>	10 × 150 mm	OBD Column	<a href="#">186008224</a>

HSS C <sub>18</sub> SB ANALYTICAL COLUMNS						
Particle Size: 2.5 µm			Particle Size: 3.5 µm		Particle Size: 5 µm	
Dimension	P/N (1/pk)	P/N (3/pk)	Dimension	P/N (1/pk)	Dimension	P/N (1/pk)
2.1 × 30 mm <i>XP</i>	<a href="#">186006160</a>	<a href="#">176002634</a>	2.1 × 50 mm	<a href="#">186006422</a>	2.1 × 50 mm	<a href="#">186006432</a>
2.1 × 50 mm <i>XP</i>	<a href="#">186006161</a>	<a href="#">176002635</a>	2.1 × 75 mm	<a href="#">186006423</a>	2.1 × 100 mm	<a href="#">186006433</a>
2.1 × 75 mm <i>XP</i>	<a href="#">186006162</a>	<a href="#">176002636</a>	2.1 × 100 mm	<a href="#">186006424</a>	2.1 × 150 mm	<a href="#">186006434</a>
2.1 × 100 mm <i>XP</i>	<a href="#">186006163</a>	<a href="#">176002637</a>	2.1 × 150 mm	<a href="#">186006425</a>	3.0 × 50 mm	<a href="#">186006437</a>
2.1 × 150 mm <i>XP</i>	<a href="#">186006742</a>	<a href="#">176002901</a>	3.0 × 50 mm	<a href="#">186004747</a>	3.0 × 100 mm	<a href="#">186006438</a>
3.0 × 30 mm <i>XP</i>	<a href="#">186006164</a>	<a href="#">176002638</a>	3.0 × 75 mm	<a href="#">186005643</a>	3.0 × 150 mm	<a href="#">186006439</a>
3.0 × 50 mm <i>XP</i>	<a href="#">186006165</a>	<a href="#">176002639</a>	3.0 × 100 mm	<a href="#">186004743</a>	3.0 × 250 mm	<a href="#">186006440</a>
3.0 × 75 mm <i>XP</i>	<a href="#">186006166</a>	<a href="#">176002640</a>	3.0 × 150 mm	<a href="#">186004744</a>	4.6 × 50 mm	<a href="#">186004757</a>
3.0 × 100 mm <i>XP</i>	<a href="#">186006167</a>	<a href="#">176002641</a>	4.6 × 50 mm	<a href="#">186004753</a>	4.6 × 75 mm	<a href="#">186006443</a>
3.0 × 150 mm <i>XP</i>	<a href="#">186006743</a>	<a href="#">176002902</a>	4.6 × 75 mm	<a href="#">186006428</a>	4.6 × 100 mm	<a href="#">186006444</a>
4.6 × 30 mm <i>XP</i>	<a href="#">186006168</a>	—	4.6 × 100 mm	<a href="#">186004748</a>	4.6 × 150 mm	<a href="#">186004754</a>
4.6 × 50 mm <i>XP</i>	<a href="#">186006169</a>	—	4.6 × 150 mm	<a href="#">186004749</a>	4.6 × 250 mm	<a href="#">186004756</a>
4.6 × 75 mm <i>XP</i>	<a href="#">186006170</a>	—	4.6 × 250 mm	<a href="#">186004751</a>		
4.6 × 100 mm <i>XP</i>	<a href="#">186006171</a>	—				
4.6 × 150 mm <i>XP</i>	<a href="#">186006744</a>	—				

PREPARATIVE COLUMNS					
Particle Size: 5 µm			Particle Size: 5 µm		
Dimension	Type	P/N (1/pk)	Dimension	Type	P/N (1/pk)
10 × 10 mm	Guard Cartridge	<a href="#">186004758</a> <sup>1</sup>	10 × 100 mm	OBD Column	<a href="#">186008220</a>
10 × 50 mm	OBD Column	<a href="#">186008219</a>	10 × 150 mm	OBD Column	<a href="#">186008221</a>

<sup>1</sup> Requires 10 × 10 mm Cartridge Holder, p/n: [289000779](#).  
<sup>2</sup> Requires 19 × 10 mm Cartridge Holder, p/n: [186000709](#).  
<sup>3</sup> Requires 30 × 10 mm Prep Guard Holder, p/n: [186006912](#).

XSelect Columns *Continued*

HSS T3

ANALYTICAL COLUMNS						
Particle Size: 2.5 µm			Particle Size: 3.5 µm		Particle Size: 5 µm	
Dimension	P/N (1/pk)	P/N (3/pk)	Dimension	P/N (1/pk)	Dimension	P/N (1/pk)
2.1 × 30 mm <i>XP</i>	<a href="#">186006148</a>	<a href="#">176002626</a>	1.0 × 100 mm	<a href="#">186006459</a>	2.1 × 50 mm	<a href="#">186006473</a>
2.1 × 50 mm <i>XP</i>	<a href="#">186006149</a>	<a href="#">176002627</a>	1.0 × 150 mm	<a href="#">186006460</a>	2.1 × 100 mm	<a href="#">186006474</a>
2.1 × 75 mm <i>XP</i>	<a href="#">186006150</a>	<a href="#">176002628</a>	2.1 × 30 mm	<a href="#">186006462</a>	2.1 × 150 mm	<a href="#">186006475</a>
2.1 × 100 mm <i>XP</i>	<a href="#">186006151</a>	<a href="#">176002629</a>	2.1 × 50 mm	<a href="#">186006463</a>	3.0 × 50 mm	<a href="#">186006478</a>
2.1 × 150 mm <i>XP</i>	<a href="#">186006739</a>	<a href="#">176002899</a>	2.1 × 75 mm	<a href="#">186006464</a>	3.0 × 100 mm	<a href="#">186006479</a>
3.0 × 30 mm <i>XP</i>	<a href="#">186006152</a>	<a href="#">176002630</a>	2.1 × 100 mm	<a href="#">186006465</a>	3.0 × 150 mm	<a href="#">186006480</a>
3.0 × 50 mm <i>XP</i>	<a href="#">186006153</a>	<a href="#">176002631</a>	2.1 × 150 mm	<a href="#">186006466</a>	3.0 × 250 mm	<a href="#">186006481</a>
3.0 × 75 mm <i>XP</i>	<a href="#">186006154</a>	<a href="#">176002632</a>	3.0 × 30 mm	<a href="#">186004783</a>	4.6 × 50 mm	<a href="#">186004794</a>
3.0 × 100 mm <i>XP</i>	<a href="#">186006155</a>	<a href="#">176002633</a>	3.0 × 50 mm	<a href="#">186004784</a>	4.6 × 75 mm	<a href="#">186006484</a>
3.0 × 150 mm <i>XP</i>	<a href="#">186006740</a>	<a href="#">176002900</a>	3.0 × 75 mm	<a href="#">186005641</a>	4.6 × 100 mm	<a href="#">186006485</a>
4.6 × 30 mm <i>XP</i>	<a href="#">186006156</a>	—	3.0 × 100 mm	<a href="#">186004780</a>	4.6 × 150 mm	<a href="#">186004791</a>
4.6 × 50 mm <i>XP</i>	<a href="#">186006157</a>	—	3.0 × 150 mm	<a href="#">186004781</a>	4.6 × 250 mm	<a href="#">186004793</a>
4.6 × 75 mm <i>XP</i>	<a href="#">186006158</a>	—	4.6 × 50 mm	<a href="#">186004790</a>		
4.6 × 100 mm <i>XP</i>	<a href="#">186006159</a>	—	4.6 × 75 mm	<a href="#">186006469</a>		
4.6 × 150 mm <i>XP</i>	<a href="#">186006741</a>	—	4.6 × 100 mm	<a href="#">186004785</a>		
			4.6 × 150 mm	<a href="#">186004786</a>		
			4.6 × 250 mm	<a href="#">186004788</a>		

PREPARATIVE COLUMNS					
Particle Size: 5 µm			Particle Size: 5 µm		
Dimension	Type	P/N (1/pk)	Dimension	Type	P/N (1/pk)
10 × 10 mm	Guard Cartridge	<a href="#">186004795</a> <sup>1</sup>	10 × 150 mm	OBD Column	<a href="#">186008227</a>
10 × 50 mm	OBD Column	<a href="#">186008225</a>	10 × 250 mm	OBD Column	<a href="#">186008280</a>
10 × 100 mm	OBD Column	<a href="#">186008226</a>			

HSS PFP

ANALYTICAL COLUMNS						
Particle Size: 2.5 µm			Particle Size: 3.5 µm		Particle Size: 5 µm	
Dimension	P/N (1/pk)	P/N (3/pk)	Dimension	P/N (1/pk)	Dimension	P/N (1/pk)
2.1 × 30 mm <i>XP</i>	<a href="#">186006172</a>	<a href="#">176002642</a>	2.1 × 50 mm	<a href="#">186005847</a>	2.1 × 50 mm	<a href="#">186005869</a>
2.1 × 50 mm <i>XP</i>	<a href="#">186006173</a>	<a href="#">176002643</a>	2.1 × 75 mm	<a href="#">186005848</a>	2.1 × 100 mm	<a href="#">186005871</a>
2.1 × 75 mm <i>XP</i>	<a href="#">186006174</a>	<a href="#">176002644</a>	2.1 × 100 mm	<a href="#">186005849</a>	2.1 × 150 mm	<a href="#">186005872</a>
2.1 × 100 mm <i>XP</i>	<a href="#">186006175</a>	<a href="#">176002645</a>	2.1 × 150 mm	<a href="#">186005850</a>	3.0 × 50 mm	<a href="#">186005875</a>
2.1 × 150 mm <i>XP</i>	<a href="#">186006745</a>	<a href="#">176002903</a>	3.0 × 30 mm	<a href="#">186005852</a>	3.0 × 100 mm	<a href="#">186005877</a>
3.0 × 30 mm <i>XP</i>	<a href="#">186006176</a>	<a href="#">176002646</a>	3.0 × 50 mm	<a href="#">186005853</a>	3.0 × 150 mm	<a href="#">186005878</a>
3.0 × 50 mm <i>XP</i>	<a href="#">186006177</a>	<a href="#">176002647</a>	3.0 × 75 mm	<a href="#">186005854</a>	3.0 × 250 mm	<a href="#">186005879</a>
3.0 × 75 mm <i>XP</i>	<a href="#">186006178</a>	<a href="#">176002648</a>	3.0 × 100 mm	<a href="#">186005855</a>	4.6 × 50 mm	<a href="#">186005882</a>
3.0 × 100 mm <i>XP</i>	<a href="#">186006179</a>	<a href="#">176002649</a>	3.0 × 150 mm	<a href="#">186005856</a>	4.6 × 75 mm	<a href="#">186005883</a>
3.0 × 150 mm <i>XP</i>	<a href="#">186006746</a>	<a href="#">176002904</a>	4.6 × 50 mm	<a href="#">186005859</a>	4.6 × 100 mm	<a href="#">186005884</a>
4.6 × 30 mm <i>XP</i>	<a href="#">186006180</a>	—	4.6 × 75 mm	<a href="#">186005860</a>	4.6 × 150 mm	<a href="#">186005885</a>
4.6 × 50 mm <i>XP</i>	<a href="#">186006181</a>	—	4.6 × 100 mm	<a href="#">186005861</a>	4.6 × 250 mm	<a href="#">186005886</a>
4.6 × 75 mm <i>XP</i>	<a href="#">186006182</a>	—	4.6 × 150 mm	<a href="#">186005862</a>		
4.6 × 100 mm <i>XP</i>	<a href="#">186006183</a>	—	4.6 × 250 mm	<a href="#">186005863</a>		
4.6 × 150 mm <i>XP</i>	<a href="#">186006747</a>	—				

<sup>1</sup>Requires 10 × 10 mm Cartridge Holder, p/n: [289000779](#).



XSelect Columns *Continued*

HSS CN ANALYTICAL COLUMNS						
Particle Size: 2.5 µm			Particle Size: 3.5 µm		Particle Size: 5 µm	
Dimension	P/N (1/pk)	P/N (3/pk)	Dimension	P/N (1/pk)	Dimension	P/N (1/pk)
2.1 × 30 mm <i>XP</i>	<a href="#">186006184</a>	<a href="#">176002650</a>	2.1 × 50 mm	<a href="#">186005907</a>	2.1 × 50 mm	<a href="#">186005929</a>
2.1 × 50 mm <i>XP</i>	<a href="#">186006185</a>	<a href="#">176002651</a>	2.1 × 75 mm	<a href="#">186005908</a>	2.1 × 100 mm	<a href="#">186005931</a>
2.1 × 75 mm <i>XP</i>	<a href="#">186006186</a>	<a href="#">176002652</a>	2.1 × 100 mm	<a href="#">186005909</a>	2.1 × 150 mm	<a href="#">186005932</a>
2.1 × 100 mm <i>XP</i>	<a href="#">186006187</a>	<a href="#">176002653</a>	2.1 × 150 mm	<a href="#">186005910</a>	3.0 × 50 mm	<a href="#">186005935</a>
2.1 × 150 mm <i>XP</i>	<a href="#">186006748</a>	<a href="#">176002905</a>	3.0 × 50 mm	<a href="#">186005913</a>	3.0 × 100 mm	<a href="#">186005937</a>
3.0 × 30 mm <i>XP</i>	<a href="#">186006188</a>	<a href="#">176002654</a>	3.0 × 75 mm	<a href="#">186005914</a>	3.0 × 150 mm	<a href="#">186005938</a>
3.0 × 50 mm <i>XP</i>	<a href="#">186006189</a>	<a href="#">176002655</a>	3.0 × 100 mm	<a href="#">186005915</a>	3.0 × 250 mm	<a href="#">186005939</a>
3.0 × 75 mm <i>XP</i>	<a href="#">186006190</a>	<a href="#">176002656</a>	3.0 × 150 mm	<a href="#">186005916</a>	4.6 × 50 mm	<a href="#">186005942</a>
3.0 × 100 mm <i>XP</i>	<a href="#">186006191</a>	<a href="#">176002657</a>	4.6 × 50 mm	<a href="#">186005919</a>	4.6 × 75 mm	<a href="#">186005943</a>
3.0 × 150 mm <i>XP</i>	<a href="#">186006749</a>	<a href="#">176002906</a>	4.6 × 75 mm	<a href="#">186005920</a>	4.6 × 100 mm	<a href="#">186005944</a>
4.6 × 30 mm <i>XP</i>	<a href="#">186006192</a>	—	4.6 × 100 mm	<a href="#">186005921</a>	4.6 × 150 mm	<a href="#">186005945</a>
4.6 × 50 mm <i>XP</i>	<a href="#">186006193</a>	—	4.6 × 150 mm	<a href="#">186005922</a>	4.6 × 250 mm	<a href="#">186005946</a>
4.6 × 75 mm <i>XP</i>	<a href="#">186006194</a>	—	4.6 × 250 mm	<a href="#">186005923</a>		
4.6 × 100 mm <i>XP</i>	<a href="#">186006195</a>	—				
4.6 × 150 mm <i>XP</i>	<a href="#">186006750</a>	—				

Peptide CSH C <sub>18</sub> <sup>+</sup> 130 Å ANALYTICAL COLUMNS					
Particle Size: 2.5 µm			Particle Size: 3.5 µm		
Dimension	P/N (1/pk)		Dimension	P/N (1/pk)	
2.1 × 50 mm <i>XP</i>	<a href="#">186006941</a>		2.1 × 50 mm	<a href="#">186006950</a>	
2.1 × 100 mm <i>XP</i>	<a href="#">186006942</a>		2.1 × 100 mm	<a href="#">186006951</a>	
2.1 × 150 mm <i>XP</i>	<a href="#">186006943</a>		2.1 × 150 mm	<a href="#">186006952</a>	
4.6 × 50 mm <i>XP</i>	<a href="#">186006946</a>		4.6 × 50 mm	<a href="#">186006955</a>	
4.6 × 100 mm <i>XP</i>	<a href="#">186006947</a>		4.6 × 100 mm	<a href="#">186006956</a>	
4.6 × 150 mm <i>XP</i>	<a href="#">186007038</a>		4.6 × 150 mm	<a href="#">186006957</a>	

PREPARATIVE COLUMNS					
Particle Size: 5 µm			Particle Size: 5 µm		
Dimension	Type	P/N (1/pk)	Dimension	Type	P/N (1/pk)
4.6 × 50 mm	Column	<a href="#">186007076</a> <sup>4</sup>	19 × 250 mm	OBD Column	<a href="#">186007031</a>
4.6 × 100 mm	Column	<a href="#">186007077</a> <sup>4</sup>	30 × 50 mm	OBD Column	<a href="#">186007026</a>
4.6 × 150 mm	Column	<a href="#">186007078</a> <sup>4</sup>	30 × 100 mm	OBD Column	<a href="#">186007025</a>
10 × 10 mm	Guard	<a href="#">186007015</a> <sup>1</sup>	30 × 150 mm	OBD Column	<a href="#">186007023</a>
10 × 50 mm	OBD Column	<a href="#">186008264</a>	30 × 250 mm	OBD Column	<a href="#">186007024</a>
10 × 100 mm	OBD Column	<a href="#">186008265</a>	50 × 50 mm	OBD Column	<a href="#">186007030</a>
10 × 150 mm	OBD Column	<a href="#">186008266</a>	50 × 100 mm	OBD Column	<a href="#">186007027</a>
10 × 250 mm	OBD Column	<a href="#">186008267</a>	50 × 150 mm	OBD Column	<a href="#">186007028</a>
19 × 10 mm	Guard	<a href="#">186007019</a> <sup>3</sup>	50 × 250 mm	OBD Column	<a href="#">186007029</a>
19 × 50 mm	OBD Column	<a href="#">186007022</a>			
19 × 100 mm	OBD Column	<a href="#">186007020</a>			
19 × 150 mm	OBD Column	<a href="#">186007021</a>			

<sup>1</sup>Requires 10 × 10 mm Cartridge Holder, p/n: [289000779](#).

<sup>3</sup>Requires 19 × 10 mm Cartridge Holder, p/n: [186000709](#).

<sup>4</sup>For use in developing lab-scale preparative chromatography.

XSelect Columns Method Validation Kits\*

	Particle Size: 2.5 $\mu$ m		Particle Size: 3.5 $\mu$ m		Particle Size: 5 $\mu$ m	
	Dimension	P/N (3/pk)	Dimension	P/N (3/pk)	Dimension	P/N (3/pk)
<b>CSH C<sub>18</sub></b>	2.1 $\times$ 50 mm <i>XP</i>	<a href="#">186006233</a>	2.1 $\times$ 100 mm	<a href="#">186005538</a>	2.1 $\times$ 150 mm	<a href="#">186005543</a>
	2.1 $\times$ 100 mm <i>XP</i>	<a href="#">186006234</a>	3.0 $\times$ 100 mm	<a href="#">186005539</a>	3.0 $\times$ 100 mm	186005544
	2.1 $\times$ 150 mm <i>XP</i>	<a href="#">186006785</a>	3.0 $\times$ 150 mm	<a href="#">186005540</a>	3.0 $\times$ 150 mm	<a href="#">186005545</a>
	3.0 $\times$ 50 mm <i>XP</i>	<a href="#">186006235</a>	4.6 $\times$ 100 mm	<a href="#">186005541</a>	4.6 $\times$ 100 mm	<a href="#">186005546</a>
	3.0 $\times$ 100 mm <i>XP</i>	<a href="#">186006236</a>	4.6 $\times$ 150 mm	<a href="#">186005542</a>	4.6 $\times$ 150 mm	<a href="#">186005547</a>
	3.0 $\times$ 150 mm <i>XP</i>	<a href="#">186006786</a>			4.6 $\times$ 250 mm	<a href="#">186005548</a>
	4.6 $\times$ 50 mm <i>XP</i>	<a href="#">186006237</a>				
	4.6 $\times$ 100 mm <i>XP</i>	<a href="#">186006238</a>				
	4.6 $\times$ 150 mm <i>XP</i>	<a href="#">186006787</a>				
<b>CSH Fluoro-Phenyl</b>	2.1 $\times$ 50 mm <i>XP</i>	<a href="#">186006239</a>	2.1 $\times$ 100 mm	<a href="#">186005549</a>	2.1 $\times$ 150 mm	<a href="#">186005554</a>
	2.1 $\times$ 100 mm <i>XP</i>	<a href="#">186006240</a>	3.0 $\times$ 100 mm	186005550	3.0 $\times$ 100 mm	186005555
	2.1 $\times$ 150 mm <i>XP</i>	<a href="#">186006788</a>	3.0 $\times$ 150 mm	186005551	3.0 $\times$ 150 mm	<a href="#">186005556</a>
	3.0 $\times$ 50 mm <i>XP</i>	<a href="#">186006241</a>	4.6 $\times$ 100 mm	<a href="#">186005552</a>	4.6 $\times$ 100 mm	<a href="#">186005557</a>
	3.0 $\times$ 100 mm <i>XP</i>	<a href="#">186006242</a>	4.6 $\times$ 150 mm	<a href="#">186005553</a>	4.6 $\times$ 150 mm	<a href="#">186005558</a>
	3.0 $\times$ 150 mm <i>XP</i>	<a href="#">186006789</a>			4.6 $\times$ 250 mm	<a href="#">186005559</a>
	4.6 $\times$ 50 mm <i>XP</i>	<a href="#">186006243</a>				
	4.6 $\times$ 100 mm <i>XP</i>	<a href="#">186006244</a>				
	4.6 $\times$ 150 mm <i>XP</i>	<a href="#">186006790</a>				
<b>CSH Phenyl-Hexyl</b>	2.1 $\times$ 50 mm <i>XP</i>	<a href="#">186006245</a>	2.1 $\times$ 100 mm	<a href="#">186005560</a>	2.1 $\times$ 150 mm	<a href="#">186005565</a>
	2.1 $\times$ 100 mm <i>XP</i>	<a href="#">186006246</a>	3.0 $\times$ 100 mm	<a href="#">186005561</a>	3.0 $\times$ 100 mm	186005566
	2.1 $\times$ 150 mm <i>XP</i>	<a href="#">186006791</a>	3.0 $\times$ 150 mm	<a href="#">186005562</a>	3.0 $\times$ 150 mm	186005567
	3.0 $\times$ 50 mm <i>XP</i>	<a href="#">186006247</a>	4.6 $\times$ 100 mm	<a href="#">186005563</a>	4.6 $\times$ 100 mm	<a href="#">186005568</a>
	3.0 $\times$ 100 mm <i>XP</i>	<a href="#">186006248</a>	4.6 $\times$ 150 mm	<a href="#">186005564</a>	4.6 $\times$ 150 mm	<a href="#">186005569</a>
	3.0 $\times$ 150 mm <i>XP</i>	<a href="#">186006792</a>			4.6 $\times$ 250 mm	<a href="#">186005570</a>
	4.6 $\times$ 50 mm <i>XP</i>	<a href="#">186006249</a>				
	4.6 $\times$ 100 mm <i>XP</i>	<a href="#">186006250</a>				
	4.6 $\times$ 150 mm <i>XP</i>	<a href="#">186006793</a>				
<b>Peptide CSH C<sub>18</sub></b>	2.1 $\times$ 100 mm <i>XP</i>	<a href="#">186006945</a>	2.1 $\times$ 100 mm	<a href="#">186006953</a>		
	4.6 $\times$ 100 mm <i>XP</i>	<a href="#">186006966</a>	4.6 $\times$ 100 mm	<a href="#">186006959</a>		

\*Each Method Validation Kit contains 3 columns, each from a different batch.

XSelect Columns Method Validation Kits\* *Continued*

	Particle Size: 2.5 $\mu$ m		Particle Size: 3.5 $\mu$ m		Particle Size: 5 $\mu$ m	
	Dimension	P/N (3/pk)	Dimension	P/N (3/pk)	Dimension	P/N (3/pk)
<b>HSS C<sub>18</sub></b>	2.1 $\times$ 50 mm <i>XP</i>	<a href="#">186006251</a>	2.1 $\times$ 100 mm	<a href="#">186006406</a>	2.1 $\times$ 150 mm	<a href="#">186006411</a>
	2.1 $\times$ 100 mm <i>XP</i>	<a href="#">186006252</a>	3.0 $\times$ 100 mm	186006407	3.0 $\times$ 100 mm	186006412
	2.1 $\times$ 150 mm <i>XP</i>	<a href="#">186006794</a>	3.0 $\times$ 150 mm	186006408	3.0 $\times$ 150 mm	186006413
	3.0 $\times$ 50 mm <i>XP</i>	<a href="#">186006253</a>	4.6 $\times$ 100 mm	<a href="#">186006409</a>	4.6 $\times$ 100 mm	<a href="#">186006414</a>
	3.0 $\times$ 100 mm <i>XP</i>	<a href="#">186006254</a>	4.6 $\times$ 150 mm	<a href="#">186006410</a>	4.6 $\times$ 150 mm	<a href="#">186006415</a>
	3.0 $\times$ 150 mm <i>XP</i>	<a href="#">186006795</a>			4.6 $\times$ 250 mm	<a href="#">186006416</a>
	4.6 $\times$ 50 mm <i>XP</i>	<a href="#">186006255</a>				
	4.6 $\times$ 100 mm <i>XP</i>	<a href="#">186006256</a>				
	4.6 $\times$ 150 mm <i>XP</i>	<a href="#">186006796</a>				
<b>HSS C<sub>18</sub> SB</b>	2.1 $\times$ 50 mm <i>XP</i>	<a href="#">186006263</a>	2.1 $\times$ 100 mm	<a href="#">186006447</a>	2.1 $\times$ 150 mm	<a href="#">186006452</a>
	2.1 $\times$ 100 mm <i>XP</i>	<a href="#">186006264</a>	3.0 $\times$ 100 mm	186006448	3.0 $\times$ 100 mm	186006453
	2.1 $\times$ 150 mm <i>XP</i>	<a href="#">186006800</a>	3.0 $\times$ 150 mm	<a href="#">186006449</a>	3.0 $\times$ 150 mm	186006454
	3.0 $\times$ 50 mm <i>XP</i>	<a href="#">186006265</a>	4.6 $\times$ 100 mm	<a href="#">186006450</a>	4.6 $\times$ 100 mm	<a href="#">186006455</a>
	3.0 $\times$ 100 mm <i>XP</i>	<a href="#">186006266</a>	4.6 $\times$ 150 mm	<a href="#">186006451</a>	4.6 $\times$ 150 mm	<a href="#">186006456</a>
	3.0 $\times$ 150 mm <i>XP</i>	<a href="#">186006801</a>			4.6 $\times$ 250 mm	<a href="#">186006457</a>
	4.6 $\times$ 50 mm <i>XP</i>	<a href="#">186006267</a>				
	4.6 $\times$ 100 mm <i>XP</i>	<a href="#">186006268</a>				
	4.6 $\times$ 150 mm <i>XP</i>	<a href="#">186006802</a>				
<b>HSS T3</b>	2.1 $\times$ 50 mm <i>XP</i>	<a href="#">186006257</a>	2.1 $\times$ 100 mm	<a href="#">186006488</a>	2.1 $\times$ 150 mm	<a href="#">186006493</a>
	2.1 $\times$ 100 mm <i>XP</i>	<a href="#">186006258</a>	3.0 $\times$ 100 mm	<a href="#">186006489</a>	3.0 $\times$ 100 mm	186006494
	2.1 $\times$ 150 mm <i>XP</i>	<a href="#">186006797</a>	3.0 $\times$ 150 mm	<a href="#">186006490</a>	3.0 $\times$ 150 mm	186006495
	3.0 $\times$ 50 mm <i>XP</i>	<a href="#">186006259</a>	4.6 $\times$ 100 mm	<a href="#">186006491</a>	4.6 $\times$ 100 mm	<a href="#">186006496</a>
	3.0 $\times$ 100 mm <i>XP</i>	<a href="#">186006260</a>	4.6 $\times$ 150 mm	<a href="#">186006492</a>	4.6 $\times$ 150 mm	<a href="#">186006497</a>
	3.0 $\times$ 150 mm <i>XP</i>	<a href="#">186006798</a>			4.6 $\times$ 250 mm	<a href="#">186006498</a>
	4.6 $\times$ 50 mm <i>XP</i>	<a href="#">186006261</a>				
	4.6 $\times$ 100 mm <i>XP</i>	<a href="#">186006262</a>				
	4.6 $\times$ 150 mm <i>XP</i>	<a href="#">186006799</a>				
<b>HSS PFP</b>	2.1 $\times$ 50 mm <i>XP</i>	<a href="#">186006815</a>	2.1 $\times$ 100 mm	<a href="#">186005890</a>	2.1 $\times$ 150 mm	186005895
	2.1 $\times$ 100 mm <i>XP</i>	<a href="#">186006816</a>	3.0 $\times$ 100 mm	186005891	3.0 $\times$ 100 mm	186005896
	2.1 $\times$ 150 mm <i>XP</i>	<a href="#">186006803</a>	3.0 $\times$ 150 mm	186005892	3.0 $\times$ 150 mm	186005897
	3.0 $\times$ 50 mm <i>XP</i>	<a href="#">186006817</a>	4.6 $\times$ 100 mm	186005893	4.6 $\times$ 100 mm	<a href="#">186005898</a>
	3.0 $\times$ 100 mm <i>XP</i>	<a href="#">186006818</a>	4.6 $\times$ 150 mm	<a href="#">186005894</a>	4.6 $\times$ 150 mm	<a href="#">186005899</a>
	3.0 $\times$ 150 mm <i>XP</i>	<a href="#">186006804</a>			4.6 $\times$ 250 mm	<a href="#">186005900</a>
	4.6 $\times$ 50 mm <i>XP</i>	<a href="#">186006273</a>				
	4.6 $\times$ 100 mm <i>XP</i>	<a href="#">186006274</a>				
	4.6 $\times$ 150 mm <i>XP</i>	<a href="#">186006805</a>				

\*Each Method Validation Kit contains 3 columns, each from a different batch.

XSelect Columns Method Validation Kits\* *Continued*

	Particle Size: 2.5 µm		Particle Size: 3.5 µm		Particle Size: 5 µm	
	Dimension	P/N (3/pk)	Dimension	P/N (3/pk)	Dimension	P/N (3/pk)
<b>HSS CN</b>	2.1 × 50 mm <i>XP</i>	<a href="#">186006275</a>	2.1 × 100 mm	<a href="#">186005950</a>	2.1 × 150 mm	<a href="#">186005955</a>
	2.1 × 100 mm <i>XP</i>	<a href="#">186006276</a>	3.0 × 100 mm	186005951	3.0 × 100 mm	<a href="#">186005956</a>
	2.1 × 150 mm <i>XP</i>	<a href="#">186006806</a>	3.0 × 150 mm	<a href="#">186005952</a>	3.0 × 150 mm	186005957
	3.0 × 50 mm <i>XP</i>	<a href="#">186006277</a>	4.6 × 100 mm	<a href="#">186005953</a>	4.6 × 100 mm	<a href="#">186005958</a>
	3.0 × 100 mm <i>XP</i>	<a href="#">186006278</a>	4.6 × 150 mm	<a href="#">186005954</a>	4.6 × 150 mm	<a href="#">186005959</a>
	3.0 × 150 mm <i>XP</i>	<a href="#">186006807</a>			4.6 × 250 mm	<a href="#">186005960</a>
	4.6 × 50 mm <i>XP</i>	<a href="#">186006279</a>				
	4.6 × 100 mm <i>XP</i>	<a href="#">186006280</a>				
	4.6 × 150 mm <i>XP</i>	<a href="#">186006808</a>				

\*Each Method Validation Kit contains 3 columns, each from a different batch.

## XSelect VanGuard Cartridges\*

	Particle Size: 2.5 µm		Particle Size: 3.5 µm		Particle Size: 5 µm	
	Dimension	P/N (3/pk)	Dimension	P/N (3/pk)	Dimension	P/N (3/pk)
<b>CSH C<sub>18</sub></b>	2.1 × 5 mm <i>XP</i>	<a href="#">186007817</a>	2.1 × 5 mm	<a href="#">186007811</a>	2.1 × 5 mm	<a href="#">186007814</a>
	3.9 × 5 mm <i>XP</i>	<a href="#">186007819</a>	3.9 × 5 mm	<a href="#">186007813</a>	3.9 × 5 mm	<a href="#">186007816</a>
<b>CSH Fluoro-Phenyl</b>	2.1 × 5 mm <i>XP</i>	<a href="#">186007827</a>	2.1 × 5 mm	<a href="#">186007820</a>	2.1 × 5 mm	<a href="#">186007824</a>
	3.9 × 5 mm <i>XP</i>	<a href="#">186007829</a>	3.9 × 5 mm	<a href="#">186007822</a>	3.9 × 5 mm	<a href="#">186007826</a>
<b>CSH Phenyl-Hexyl</b>	2.1 × 5 mm <i>XP</i>	<a href="#">186007839</a>	2.1 × 5 mm	<a href="#">186007830</a>	2.1 × 5 mm	<a href="#">186007836</a>
	3.9 × 5 mm <i>XP</i>	<a href="#">186007841</a>	3.9 × 5 mm	<a href="#">186007832</a>	3.9 × 5 mm	<a href="#">186007838</a>
<b>HSS C<sub>18</sub></b>	2.1 × 5 mm <i>XP</i>	<a href="#">186007857</a>	2.1 × 5 mm	<a href="#">186007851</a>	2.1 × 5 mm	<a href="#">186007854</a>
	3.9 × 5 mm <i>XP</i>	<a href="#">186007859</a>	3.9 × 5 mm	<a href="#">186007853</a>	3.9 × 5 mm	<a href="#">186007856</a>
<b>HSS C<sub>18</sub> SB</b>	2.1 × 5 mm <i>XP</i>	<a href="#">186007848</a>	2.1 × 5 mm	<a href="#">186007842</a>	2.1 × 5 mm	<a href="#">186007845</a>
	3.9 × 5 mm <i>XP</i>	<a href="#">186007850</a>	3.9 × 5 mm	<a href="#">186007844</a>	3.9 × 5 mm	<a href="#">186007847</a>
<b>HSS T3</b>	2.1 × 5 mm <i>XP</i>	<a href="#">186007884</a>	2.1 × 5 mm	<a href="#">186007878</a>	2.1 × 5 mm	<a href="#">186007881</a>
	3.9 × 5 mm <i>XP</i>	<a href="#">186007886</a>	3.9 × 5 mm	<a href="#">186007880</a>	3.9 × 5 mm	<a href="#">186007883</a>
<b>HSS PFP</b>	2.1 × 5 mm <i>XP</i>	<a href="#">186007875</a>	2.1 × 5 mm	<a href="#">186007869</a>	2.1 × 5 mm	<a href="#">186007872</a>
	3.9 × 5 mm <i>XP</i>	<a href="#">186007877</a>	3.9 × 5 mm	<a href="#">186007871</a>	3.9 × 5 mm	<a href="#">186007874</a>
<b>HSS CN</b>	2.1 × 5 mm <i>XP</i>	<a href="#">186007866</a>	2.1 × 5 mm	<a href="#">186007860</a>	2.1 × 5 mm	<a href="#">186007863</a>
	3.9 × 5 mm <i>XP</i>	<a href="#">186007868</a>	3.9 × 5 mm	<a href="#">186007862</a>	3.9 × 5 mm	<a href="#">186007865</a>

\*Each cartridge listed requires use of Universal VanGuard Cartridge Holder (Listed below, p/n [186007949](#))

## Universal VanGuard Cartridge Holder

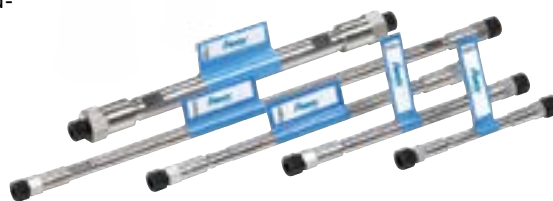
Description	P/N (1/pk)
Universal VanGuard Cartridge Holder	<a href="#">186007949</a>

## Atlantis Columns

Atlantis™  
Columns

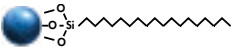
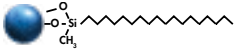

For polar compounds, Atlantis™ HPLC Columns provide exceptional performance, versatility, and retention when operating under reversed-phase conditions. The balanced retention of Atlantis Columns affords the separation of polar and non-polar analytes while providing:

- Compatibility with 100% aqueous mobile phases
- Polar-compound retention without ion-pairing reagents
- Long column life when used with mobile phases of low pH



**i** For Atlantis Premier BEH C<sub>18</sub> AX, and Atlantis Premier BEH Z-HILIC columns, please go to the MaxPeak Premier Column section found on page 104.

### Column Characteristics

	T3, 100 Å	dC <sub>18</sub> , 100 Å	HILIC Silica, 100 Å
	HPLC: 3, 5, 10 μm	HPLC: 3, 5, 10 μm	HPLC: 3, 5 μm
Ligand Benefit	Exceptional polar compound retention and balanced retention of acids, bases and neutrals. Aqueous mobile-phase compatibility, low MS bleed	General purpose, high efficiency, delivers balanced retention of acids, bases, and neutrals in mid-range pH conditions.	No ligand, general purpose separations of highly polar compounds for use in HILIC separations
Particle/Ligand			
Ligand Density*	1.6 μmol/m <sup>2</sup>	1.6 μmol/m <sup>2</sup>	N/A
Carbon Load*	14%	12%	N/A
Endcapped	Yes	Yes	No
USP Class No.	L1	L1	L3
pH Range	2-8	3-7	1-5
Temperature Limits	Low pH = 45 °C, High pH = 45 °C	Low pH = 45 °C, High pH = 45 °C	Low pH = 45 °C, High pH = 45 °C
Surface Area*	330 m <sup>2</sup> /g	330 m <sup>2</sup> /g	330 m <sup>2</sup> /g
Performance Standards	Neutrals QC Reference Material p/n: <a href="#">186006360</a>	Neutrals QC Reference Material p/n: <a href="#">186006360</a>	HILIC QC Reference Material p/n: <a href="#">186007226</a>
Application Standards	Reversed-Phase QC Reference Material p/n: <a href="#">186006363</a>	Reversed-Phase QC Reference Material p/n: <a href="#">186006363</a>	HILIC QC Reference Material p/n: <a href="#">186007226</a>

\*Expected or approximate value.



**APPLICATION AREA:** Analyze Metabolites

"By using this column we can estimate seven compounds in a single injection."

**REVIEWER:** Suresh Babu Alaparathi

**ORGANIZATION:** West Virginia State University

## Atlantis Columns

ANALYTICAL COLUMNS			
Particle Size: 3 $\mu$ m		Particle Size: 5 $\mu$ m	
Dimension	P/N (1/pk)	Dimension	P/N (1/pk)
1.0 $\times$ 50 mm	<a href="#">186003713</a>	2.1 $\times$ 30 mm	<a href="#">186003733</a>
1.0 $\times$ 150 mm	<a href="#">186003714</a>	2.1 $\times$ 50 mm	<a href="#">186003734</a>
2.1 $\times$ 20 mm /S	<a href="#">186003715</a>	2.1 $\times$ 100 mm	<a href="#">186003735</a>
2.1 $\times$ 30 mm	<a href="#">186003716</a>	2.1 $\times$ 150 mm	<a href="#">186003736</a>
2.1 $\times$ 50 mm	<a href="#">186003717</a>	3.0 $\times$ 50 mm	<a href="#">186003738</a>
2.1 $\times$ 75 mm	<a href="#">186005652</a>	3.0 $\times$ 100 mm	<a href="#">186003739</a>
2.1 $\times$ 100 mm	<a href="#">186003718</a>	3.0 $\times$ 150 mm	<a href="#">186003740</a>
2.1 $\times$ 150 mm	<a href="#">186003719</a>	3.0 $\times$ 250 mm	<a href="#">186003741</a>
3.0 $\times$ 50 mm	<a href="#">186003721</a>	4.6 $\times$ 50 mm	<a href="#">186003744</a>
3.0 $\times$ 75 mm	<a href="#">186005653</a>	4.6 $\times$ 75 mm	<a href="#">186003745</a>
3.0 $\times$ 100 mm	<a href="#">186003722</a>	4.6 $\times$ 100 mm	<a href="#">186003746</a>
3.0 $\times$ 150 mm	<a href="#">186003723</a>	4.6 $\times$ 150 mm	<a href="#">186003747</a>
4.6 $\times$ 50 mm	<a href="#">186003726</a>	4.6 $\times$ 250 mm	<a href="#">186003748</a>
4.6 $\times$ 75 mm	<a href="#">186003727</a>		
4.6 $\times$ 100 mm	<a href="#">186003728</a>		
4.6 $\times$ 150 mm	<a href="#">186003729</a>		

PREPARATIVE COLUMNS					
Particle Size: 5 $\mu$ m			Particle Size: 10 $\mu$ m		
Dimension	Type	P/N (1/pk)	Dimension	Type	P/N (1/pk)
10 $\times$ 10 mm	Guard Cartridge	<a href="#">186003695</a> <sup>1</sup>	10 $\times$ 10 mm	Guard Cartridge	<a href="#">186003706</a> <sup>1</sup>
10 $\times$ 50 mm	OBD Column	<a href="#">186008202</a>	10 $\times$ 150 mm	OBD Column	<a href="#">186008206</a>
10 $\times$ 100 mm	OBD Column	<a href="#">186008203</a>	10 $\times$ 250 mm	OBD Column	<a href="#">186008207</a>
10 $\times$ 150 mm	OBD Column	<a href="#">186008204</a>	19 $\times$ 10 mm	Guard Cartridge	<a href="#">186003710</a> <sup>2</sup>
10 $\times$ 250 mm	OBD Column	<a href="#">186008205</a>	19 $\times$ 50 mm	OBD Column	<a href="#">186003707</a>
19 $\times$ 10 mm	Guard Cartridge	<a href="#">186003699</a> <sup>2</sup>	19 $\times$ 150 mm	OBD Column	<a href="#">186003708</a>
19 $\times$ 50 mm	OBD Column	<a href="#">186003696</a>	19 $\times$ 250 mm	OBD Column	<a href="#">186003709</a>
19 $\times$ 100 mm	OBD Column	<a href="#">186003697</a>	30 $\times$ 10 mm	Guard Cartridge	<a href="#">186006878</a> <sup>3</sup>
19 $\times$ 150 mm	OBD Column	<a href="#">186003698</a>	30 $\times$ 75 mm	OBD Column	<a href="#">186004712</a>
19 $\times$ 250 mm	OBD Column	<a href="#">186004026</a>	30 $\times$ 150 mm	OBD Column	<a href="#">186003711</a>
30 $\times$ 10 mm	Guard Cartridge	<a href="#">186006879</a> <sup>3</sup>	30 $\times$ 250 mm	OBD Column	<a href="#">186003712</a>
30 $\times$ 50 mm	OBD Column	<a href="#">186003700</a>	50 $\times$ 50 mm	OBD Column	<a href="#">186004083</a>
30 $\times$ 75 mm	OBD Column	<a href="#">186003701</a>	50 $\times$ 100 mm	OBD Column	<a href="#">186004084</a>
30 $\times$ 100 mm	OBD Column	<a href="#">186003702</a>	50 $\times$ 150 mm	OBD Column	<a href="#">186004085</a>
30 $\times$ 150 mm	OBD Column	<a href="#">186003703</a>	50 $\times$ 250 mm	OBD Column	<a href="#">186004086</a>
50 $\times$ 50 mm	OBD Column	<a href="#">186004080</a>			
50 $\times$ 100 mm	OBD Column	<a href="#">186004081</a>			
50 $\times$ 150 mm	OBD Column	<a href="#">186004082</a>			

<sup>1</sup> Requires 10  $\times$  10 mm Cartridge Holder, p/n: [289000779](#).<sup>2</sup> Requires 19  $\times$  10 mm Cartridge Holder, p/n: [186000709](#).<sup>3</sup> Requires 30  $\times$  10 mm Prep Guard Holder, p/n: [186006912](#).

Atlantis Columns *Continued*

dC <sub>18</sub>		ANALYTICAL COLUMNS			
		Particle Size: 3 µm		Particle Size: 5 µm	
Dimension	P/N (1/pk)	Dimension	P/N (1/pk)		
2.1 × 30 mm	<a href="#">186001287</a>	2.1 × 50 mm	<a href="#">186001293</a>		
2.1 × 50 mm	<a href="#">186001291</a>	2.1 × 100 mm	<a href="#">186001297</a>		
2.1 × 100 mm	<a href="#">186001295</a>	2.1 × 150 mm	<a href="#">186001301</a>		
2.1 × 150 mm	<a href="#">186001299</a>	3.0 × 100 mm	<a href="#">186001305</a>		
3.0 × 50 mm	<a href="#">186001389</a>	3.0 × 150 mm	<a href="#">186001309</a>		
3.0 × 100 mm	<a href="#">186001303</a>	3.0 × 250 mm	<a href="#">186001311</a>		
3.0 × 150 mm	<a href="#">186001307</a>	3.9 × 150 mm	<a href="#">186001319</a>		
3.9 × 100 mm	<a href="#">186001393</a>	4.6 × 50 mm	<a href="#">186001331</a>		
3.9 × 150 mm	<a href="#">186001317</a>	4.6 × 75 mm	<a href="#">186001335</a>		
4.6 × 50 mm	<a href="#">186001329</a>	4.6 × 100 mm	<a href="#">186001340</a>		
4.6 × 75 mm	<a href="#">186001333</a>	4.6 × 150 mm	<a href="#">186001344</a>		
4.6 × 100 mm	<a href="#">186001337</a>	4.6 × 250 mm	<a href="#">186001346</a>		
4.6 × 150 mm	<a href="#">186001342</a>				

PREPARATIVE COLUMNS					
Particle Size: 5 µm			Particle Size: 10 µm		
Dimension	Type	P/N (1/pk)	Dimension	Type	P/N (1/pk)
10 × 10 mm	Guard Cartridge	<a href="#">186002300</a> <sup>1</sup>	10 × 10 mm	Guard Cartridge	<a href="#">186002452</a> <sup>1</sup>
10 × 50 mm	OBD Column	<a href="#">186008146</a>	10 × 150 mm	OBD Column	<a href="#">186008149</a>
10 × 100 mm	OBD Column	<a href="#">186008148</a>	10 × 250 mm	OBD Column	<a href="#">186008151</a>
19 × 10 mm	Guard Cartridge	<a href="#">186001361</a> <sup>2</sup>	19 × 10 mm	Guard Cartridge	<a href="#">186001363</a> <sup>2</sup>
19 × 50 mm	OBD Column	<a href="#">186001365</a>	19 × 150 mm	OBD Column	<a href="#">186001369</a>
19 × 100 mm	OBD Column	<a href="#">186001367</a>	19 × 250 mm	OBD Column	<a href="#">186001371</a>
19 × 150 mm	OBD Column	<a href="#">186002800</a>	30 × 10 mm	Guard Cartridge	<a href="#">186006875</a> <sup>3</sup>
19 × 250 mm	OBD Column	<a href="#">186004030</a>	30 × 250 mm	OBD Column	<a href="#">186002418</a>
30 × 10 mm	Guard Cartridge	<a href="#">186006876</a> <sup>3</sup>			
30 × 50 mm	OBD Column	<a href="#">186001373</a>			
30 × 75 mm	OBD Column	<a href="#">186002455</a>			
30 × 150 mm	OBD Column	<a href="#">186002801</a>			

<sup>1</sup>Requires 10 × 10 mm Cartridge Holder, p/n: [289000779](#).

<sup>2</sup>Requires 19 × 10 mm Cartridge Holder, p/n: [186000709](#).

<sup>3</sup>Requires 30 × 10 mm Prep Guard Holder, p/n: [186006912](#).

## Atlantis Columns *Continued*

HILIC Silica		ANALYTICAL COLUMNS			
		Particle Size: 3 µm		Particle Size: 5 µm	
	Dimension	P/N (1/pk)		Dimension	P/N (1/pk)
	2.1 × 15 mm Direct Connect	<a href="#">186002007</a>		2.1 × 50 mm	<a href="#">186002012</a>
	2.1 × 30 mm	<a href="#">186002009</a>		2.1 × 100 mm	<a href="#">186002014</a>
	2.1 × 50 mm	<a href="#">186002011</a>		2.1 × 150 mm	<a href="#">186002016</a>
	2.1 × 100 mm	<a href="#">186002013</a>		3.0 × 50 mm	<a href="#">186002018</a>
	2.1 × 150 mm	<a href="#">186002015</a>		4.6 × 50 mm	<a href="#">186002028</a>
	3.0 × 50 mm	<a href="#">186002017</a>		4.6 × 100 mm	<a href="#">186002030</a>
	3.0 × 100 mm	<a href="#">186002019</a>		4.6 × 150 mm	<a href="#">186002032</a>
	4.6 × 50 mm	<a href="#">186002027</a>		4.6 × 250 mm	<a href="#">186002033</a>
	4.6 × 100 mm	<a href="#">186002029</a>			
	4.6 × 150 mm	<a href="#">186002031</a>			

PREPARATIVE COLUMNS					
Particle Size: 5 µm			Particle Size: 10 µm		
Dimension	Type	P/N (1/pk)	Dimension	Type	P/N (1/pk)
19 × 10 mm	Guard Cartridge	<a href="#">186003956</a> <sup>2</sup>	10 × 10 mm	Guard Cartridge	<a href="#">186002452</a> <sup>1</sup>
19 × 50 mm	OBD Column	<a href="#">186003957</a>	10 × 150 mm	OBD Column	<a href="#">186008149</a>
19 × 100 mm	OBD Column	<a href="#">186003958</a>	10 × 250 mm	OBD Column	<a href="#">186008151</a>
19 × 150 mm	OBD Column	<a href="#">186003959</a>	19 × 10 mm	Guard Cartridge	<a href="#">186001363</a> <sup>2</sup>
30 × 10 mm	Guard Cartridge	<a href="#">186006877</a> <sup>3</sup>	19 × 150 mm	OBD Column	<a href="#">186001369</a>
30 × 50 mm	OBD Column	<a href="#">186003960</a>	19 × 250 mm	OBD Column	<a href="#">186001371</a>
30 × 100 mm	OBD Column	<a href="#">186003961</a>	30 × 10 mm	Guard Cartridge	<a href="#">186006875</a> <sup>3</sup>
30 × 150 mm	OBD Column	<a href="#">186003962</a>	30 × 250 mm	OBD Column	<a href="#">186002418</a>

<sup>1</sup>Requires 10 × 10 mm Cartridge Holder, p/n: [289000779](#).

<sup>2</sup>Requires 19 × 10 mm Cartridge Holder, p/n: [186000709](#).

<sup>3</sup>Requires 30 × 10 mm Prep Guard Holder, p/n: [186006912](#).

### Atlantis Columns Method Validation Kits\*

	Particle Size: 3 µm		Particle Size: 5 µm	
	Dimension	P/N (3/pk)	Dimension	P/N (3/pk)
<b>T3</b>	4.6 × 150 mm	<a href="#">186003751</a>	4.6 × 150 mm	<a href="#">186003754</a>
			4.6 × 250 mm	<a href="#">186003755</a>
<b>HILIC Silica</b>	4.6 × 150 mm	<a href="#">186002315</a>	4.6 × 150 mm	<a href="#">186002314</a>
			4.6 × 250 mm	<a href="#">186002316</a>

\*Each Method Validation Kit contains 3 columns, each from a different batch.

### Atlantis VanGuard Cartridges\*

	Particle Size: 3 µm		Particle Size: 5 µm	
	Dimension	P/N (3/pk)	Dimension	P/N (3/pk)
<b>T3</b>	2.1 × 5 mm	<a href="#">186007674</a>	2.1 × 5 mm	<a href="#">186007678</a>
	3.9 × 5 mm	<a href="#">186007676</a>	3.9 × 5 mm	<a href="#">186007680</a>
<b>dc<sub>18</sub></b>	2.1 × 5 mm	<a href="#">186007658</a>	2.1 × 5 mm	<a href="#">186007662</a>
	3.9 × 5 mm	<a href="#">186007660</a>	3.9 × 5 mm	<a href="#">186007664</a>
<b>HILIC Silica</b>	2.1 × 5 mm	<a href="#">186007666</a>	2.1 × 5 mm	<a href="#">186007670</a>
	3.9 × 5 mm	<a href="#">186007668</a>	3.9 × 5 mm	<a href="#">186007672</a>

\*Each cartridge listed requires use of Universal VanGuard Cartridge Holder (Listed below, p/n [186007949](#))

### Universal VanGuard Cartridge Holder

Description	P/N (1/pk)
Universal VanGuard Cartridge Holder	<a href="#">186007949</a>

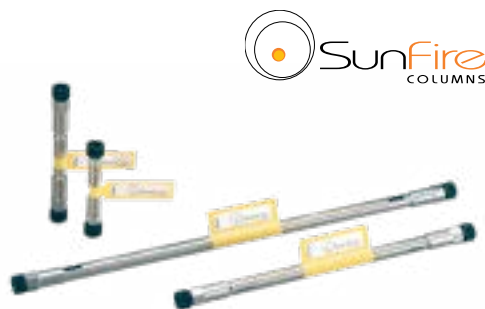


## SunFire Columns

SunFire Columns set the standard for state-of-the-art bonded C<sub>18</sub> and C<sub>8</sub> silica HPLC columns. Benefiting from years of research and product development, SunFire Columns deliver industry-leading levels of chromatographic performance, representing the best in particle and bonding expertise.

SunFire Columns offer:

- Excellent low-pH stability
- High chromatographic efficiency
- Superior peak shapes for charged analyte species



### Column Characteristics

	C <sub>18</sub> , 100 Å	C <sub>8</sub> , 100 Å	Silica, 100 Å
	HPLC: 2.5, 3.5, 5, 10 µm	HPLC: 2.5, 3.5, 5, 10 µm	HPLC: 5, 10 µm
Ligand Benefit	Highly efficient, general purpose for acids, bases, and neutrals with highest loading capacity in TFA mobile phases	General purpose, efficient and similar selectivity to C <sub>18</sub> but with less compound retentivity	No ligand, general purpose separations of highly polar compounds for use in normal phase mode
Particle/Ligand			
Ligand Density*	3.5 µmol/m <sup>2</sup>	3.5 µmol/m <sup>2</sup>	N/A
Carbon Load*	16%	12%	N/A
Endcapped	Yes	Yes	No
USP Class No.	L1	L7	L3
pH Range	2–8	2–8	2–8
Temperature Limits	Low pH = 50 °C, High pH = 40 °C	Low pH = 40 °C, High pH = 40 °C	Low pH = 55 °C, High pH = 45 °C
Surface Area*	340 m <sup>2</sup> /g	340 m <sup>2</sup> /g	340 m <sup>2</sup> /g
Performance Standards	Neutrals QC Reference Material p/n: <a href="#">186006360</a>	Neutrals QC Reference Material p/n: <a href="#">186006360</a>	—
Application Standards	Reversed-Phase QC Reference Material p/n: <a href="#">186006363</a>	Reversed-Phase QC Reference Material p/n: <a href="#">186006363</a>  HILIC QC Reference Material p/n: <a href="#">186007226</a>	—

\*Expected or approximate value.

## SunFire Columns

ANALYTICAL COLUMNS					
Particle Size: 2.5 µm*		Particle Size: 3.5 µm		Particle Size: 5 µm	
Dimension	P/N (1/pk)	Dimension	P/N (1/pk)	Dimension	P/N (1/pk)
2.1 × 30 mm	<a href="#">186003399</a>	2.1 × 50 mm	<a href="#">186002533</a>	2.1 × 50 mm	<a href="#">186002539</a>
2.1 × 50 mm	<a href="#">186003401</a>	2.1 × 100 mm	<a href="#">186002534</a>	2.1 × 100 mm	<a href="#">186002540</a>
2.1 × 75 mm	<a href="#">186005634</a>	2.1 × 150 mm	<a href="#">186002535</a>	2.1 × 150 mm	<a href="#">186002541</a>
3.0 × 30 mm	<a href="#">186003407</a>	3.0 × 50 mm	<a href="#">186002542</a>	3.0 × 50 mm	<a href="#">186002545</a>
3.0 × 50 mm	<a href="#">186003409</a>	3.0 × 100 mm	<a href="#">186002543</a>	3.0 × 100 mm	<a href="#">186002546</a>
3.0 × 75 mm	<a href="#">186005636</a>	3.0 × 150 mm	<a href="#">186002544</a>	3.0 × 150 mm	<a href="#">186002547</a>
4.6 × 50 mm	<a href="#">186003417</a>	4.6 × 20 mm /S	<a href="#">186002549</a>	3.0 × 250 mm	<a href="#">186002548</a>
		4.6 × 50 mm	<a href="#">186002551</a>	4.6 × 30 mm	<a href="#">186002556</a>
		4.6 × 75 mm	<a href="#">186002552</a>	4.6 × 50 mm	<a href="#">186002557</a>
		4.6 × 100 mm	<a href="#">186002553</a>	4.6 × 100 mm	<a href="#">186002558</a>
		4.6 × 150 mm	<a href="#">186002554</a>	4.6 × 150 mm	<a href="#">186002559</a>
				4.6 × 250 mm	<a href="#">186002560</a>

PREPARATIVE COLUMNS					
Particle Size: 5 µm			Particle Size: 10 µm		
Dimension	Type	P/N (1/pk)	Dimension	Type	P/N (1/pk)
10 × 10 mm	Guard Cartridge	<a href="#">186002565</a> <sup>1</sup>	10 × 10 mm	Guard Cartridge	<a href="#">186002663</a> <sup>1</sup>
10 × 50 mm	OBD Column	<a href="#">186008152</a>	10 × 50 mm	OBD Column	<a href="#">186008208</a>
10 × 100 mm	OBD Column	<a href="#">186008153</a>	10 × 150 mm	OBD Column	<a href="#">186008156</a>
10 × 150 mm	OBD Column	<a href="#">186008154</a>	10 × 250 mm	OBD Column	<a href="#">186008157</a>
10 × 250 mm	OBD Column	<a href="#">186008155</a>	19 × 10 mm	Guard Cartridge	<a href="#">186002666</a> <sup>2</sup>
19 × 10 mm	Guard Cartridge	<a href="#">186002569</a> <sup>2</sup>	19 × 50 mm	OBD Column	<a href="#">186002667</a>
19 × 50 mm	OBD Column	<a href="#">186002566</a>	19 × 150 mm	OBD Column	<a href="#">186002668</a>
19 × 100 mm	OBD Column	<a href="#">186002567</a>	19 × 250 mm	OBD Column	<a href="#">186002669</a>
19 × 150 mm	OBD Column	<a href="#">186002568</a>	30 × 10 mm	Guard Cartridge	<a href="#">186006884</a> <sup>3</sup>
19 × 250 mm	OBD Column	<a href="#">186004027</a>	30 × 50 mm	OBD Column	<a href="#">186003854</a>
30 × 10 mm	Guard Cartridge	<a href="#">186006885</a> <sup>3</sup>	30 × 100 mm	OBD Column	<a href="#">186003971</a>
30 × 50 mm	OBD Column	<a href="#">186002570</a>	30 × 150 mm	OBD Column	<a href="#">186002670</a>
30 × 75 mm	OBD Column	<a href="#">186002571</a>	30 × 250 mm	OBD Column	<a href="#">186002671</a>
30 × 100 mm	OBD Column	<a href="#">186002572</a>	50 × 50 mm	OBD Column	<a href="#">186002871</a>
30 × 150 mm	OBD Column	<a href="#">186002797</a>	50 × 100 mm	OBD Column	<a href="#">186003972</a>
30 × 250 mm	OBD Column	<a href="#">186003969</a>	50 × 150 mm	OBD Column	<a href="#">186002672</a>
50 × 50 mm	OBD Column	<a href="#">186002867</a>	50 × 250 mm	OBD Column	<a href="#">186002673</a>
50 × 100 mm	OBD Column	<a href="#">186002869</a>			
50 × 150 mm	OBD Column	<a href="#">186003941</a>			
50 × 250 mm	OBD Column	<a href="#">186003970</a>			

\*Recommended maximum pressure of 6000 psi (400 bar).

<sup>1</sup>Requires 10 × 10 mm Cartridge Holder, p/n: [289000779](#).

<sup>2</sup>Requires 19 × 10 mm Cartridge Holder, p/n: [186000709](#).

<sup>3</sup>Requires 30 × 10 mm Prep Guard Holder, p/n: [186006912](#).

SunFire Columns *Continued*

C<sub>8</sub>

ANALYTICAL COLUMNS						
Particle Size: 2.5 µm*			Particle Size: 3.5 µm		Particle Size: 5 µm	
Dimension	P/N (1/pk)		Dimension	P/N (1/pk)	Dimension	P/N (1/pk)
3.0 × 50 mm	<a href="#">186003410</a>		2.1 × 50 mm	<a href="#">186002710</a>	2.1 × 50 mm	<a href="#">186002715</a>
			2.1 × 100 mm	<a href="#">186002711</a>	2.1 × 100 mm	<a href="#">186002716</a>
			2.1 × 150 mm	<a href="#">186002712</a>	2.1 × 150 mm	<a href="#">186002717</a>
			3.0 × 50 mm	<a href="#">186002719</a>	3.0 × 50 mm	<a href="#">186002723</a>
			3.0 × 100 mm	<a href="#">186002720</a>	3.0 × 100 mm	<a href="#">186002724</a>
			3.0 × 150 mm	<a href="#">186002721</a>	3.0 × 150 mm	<a href="#">186002725</a>
			4.6 × 50 mm	<a href="#">186002729</a>	4.6 × 30 mm	<a href="#">186002734</a>
			4.6 × 75 mm	<a href="#">186002730</a>	4.6 × 50 mm	<a href="#">186002735</a>
			4.6 × 100 mm	<a href="#">186002731</a>	4.6 × 100 mm	<a href="#">186002736</a>
			4.6 × 150 mm	<a href="#">186002732</a>	4.6 × 150 mm	<a href="#">186002737</a>
					4.6 × 250 mm	<a href="#">186002738</a>

PREPARATIVE COLUMNS						
Particle Size: 5 µm			Particle Size: 10 µm			
Dimension	Type	P/N (1/pk)	Dimension	Type	P/N (1/pk)	
10 × 10 mm	Guard Cartridge	<a href="#">186002750</a> <sup>1</sup>	10 × 10 mm	Guard Cartridge	<a href="#">186002758</a> <sup>1</sup>	
10 × 50 mm	OBD Column	<a href="#">186008158</a>	10 × 50 mm	OBD Column	<a href="#">186008209</a>	
10 × 100 mm	OBD Column	<a href="#">186008159</a>	10 × 150 mm	OBD Column	<a href="#">186008162</a>	
10 × 150 mm	OBD Column	<a href="#">186008160</a>	10 × 250 mm	OBD Column	<a href="#">186008163</a>	
10 × 250 mm	OBD Column	<a href="#">186008161</a>	19 × 10 mm	Guard Cartridge	<a href="#">186002761</a> <sup>2</sup>	
19 × 10 mm	Guard Cartridge	<a href="#">186002754</a> <sup>2</sup>	19 × 150 mm	OBD Column	<a href="#">186002763</a>	
19 × 50 mm	OBD Column	<a href="#">186002751</a>	19 × 250 mm	OBD Column	<a href="#">186002764</a>	
19 × 100 mm	OBD Column	<a href="#">186002752</a>	30 × 10 mm	Guard Cartridge	<a href="#">186006886</a> <sup>3</sup>	
19 × 150 mm	OBD Column	<a href="#">186002753</a>	30 × 50 mm	OBD Column	<a href="#">186003853</a>	
19 × 250 mm	OBD Column	<a href="#">186004028</a>	30 × 150 mm	OBD Column	<a href="#">186002765</a>	
30 × 10 mm	Guard Cartridge	<a href="#">186006887</a> <sup>3</sup>	30 × 250 mm	OBD Column	<a href="#">186002766</a>	
30 × 50 mm	OBD Column	<a href="#">186002755</a>	50 × 50 mm	OBD Column	<a href="#">186002872</a>	
30 × 75 mm	OBD Column	<a href="#">186002756</a>	50 × 150 mm	OBD Column	<a href="#">186002767</a>	
30 × 100 mm	OBD Column	<a href="#">186002757</a>	50 × 250 mm	OBD Column	<a href="#">186002768</a>	
30 × 150 mm	OBD Column	<a href="#">186002795</a>				
50 × 50 mm	OBD Column	<a href="#">186002868</a>				
50 × 100 mm	OBD Column	<a href="#">186002870</a>				

\*Recommended maximum pressure of 6000 psi (400 bar).

<sup>1</sup>Requires 10 × 10 mm Cartridge Holder, p/n: [289000779](#).

<sup>2</sup>Requires 19 × 10 mm Cartridge Holder, p/n: [186000709](#).

<sup>3</sup>Requires 30 × 10 mm Prep Guard Holder, p/n: [186006912](#).

SunFire Columns *Continued*

ANALYTICAL COLUMNS					
Particle Size: 3.5 µm			Particle Size: 5 µm		
Dimension	P/N (1/pk)		Dimension	P/N (1/pk)	
4.6 × 150 mm	<a href="#">186003453</a>		4.6 × 150 mm	<a href="#">186003467</a>	
4.6 × 250 mm	<a href="#">186003454</a>		4.6 × 250 mm	<a href="#">186003468</a>	

PREPARATIVE COLUMNS					
Particle Size: 5 µm			Particle Size: 10 µm		
Dimension	Type	P/N (1/pk)	Dimension	Type	P/N (1/pk)
10 × 10 mm	Guard Cartridge	<a href="#">186003429</a> <sup>2</sup>	10 × 10 mm	Guard Cartridge	<a href="#">186003441</a> <sup>1</sup>
10 × 50 mm	OBD Column	<a href="#">186008180</a>	10 × 150 mm	OBD Column	<a href="#">186008184</a>
10 × 100 mm	OBD Column	<a href="#">186008181</a>	10 × 250 mm	OBD Column	<a href="#">186008185</a>
10 × 150 mm	OBD Column	<a href="#">186008182</a>	19 × 10 mm	Guard Cartridge	<a href="#">186003444</a> <sup>2</sup>
10 × 250 mm	OBD Column	<a href="#">186008183</a>	19 × 50 mm	OBD Column	<a href="#">186003445</a>
19 × 10 mm	Guard Cartridge	<a href="#">186003434</a> <sup>2</sup>	19 × 150 mm	OBD Column	<a href="#">186003446</a>
19 × 50 mm	OBD Column	<a href="#">186003431</a>	19 × 250 mm	OBD Column	<a href="#">186003447</a>
19 × 100 mm	OBD Column	<a href="#">186003432</a>	30 × 10 mm	Guard Cartridge	<a href="#">186006888</a> <sup>3</sup>
19 × 150 mm	OBD Column	<a href="#">186003433</a>	30 × 50 mm	OBD Column	<a href="#">186003855</a>
19 × 250 mm	OBD Column	<a href="#">186004029</a>	30 × 150 mm	OBD Column	<a href="#">186003448</a>
30 × 10 mm	Guard Cartridge	<a href="#">186006889</a> <sup>3</sup>	30 × 250 mm	OBD Column	<a href="#">186003449</a>
30 × 50 mm	OBD Column	<a href="#">186003435</a>	50 × 50 mm	OBD Column	<a href="#">186003450</a>
30 × 75 mm	OBD Column	<a href="#">186003436</a>	50 × 150 mm	OBD Column	<a href="#">186003451</a>
30 × 100 mm	OBD Column	<a href="#">186003437</a>	50 × 250 mm	OBD Column	<a href="#">186003452</a>
30 × 150 mm	OBD Column	<a href="#">186003438</a>			
50 × 50 mm	OBD Column	<a href="#">186003439</a>			
50 × 100 mm	OBD Column	<a href="#">186003440</a>			

\*Recommended maximum pressure of 6000 psi (400 bar).

<sup>1</sup>Requires 10 × 10 mm Cartridge Holder, p/n: [289000779](#).

<sup>2</sup>Requires 19 × 10 mm Cartridge Holder, p/n: [186000709](#).

<sup>3</sup>Requires 30 × 10 mm Prep Guard Holder, p/n: [186006912](#).

SunFire Preparative Scouting Columns

PREPARATIVE COLUMNS					
Particle Size: 10 µm					
Dimension	P/N (1/pk)				
4.6 × 150 mm	<a href="#">186003390</a>				
4.6 × 250 mm	<a href="#">186003391</a>				

ANALYTICAL COLUMNS					
Particle Size: 5 µm			Particle Size: 10 µm		
Dimension	P/N (1/pk)		Dimension	P/N (1/pk)	
4.6 × 150 mm	<a href="#">186003453</a>		4.6 × 150 mm	<a href="#">186003467</a>	
4.6 × 250 mm	<a href="#">186003454</a>		4.6 × 250 mm	<a href="#">186003468</a>	

### SunFire Columns Method Validation Kits\*

	Particle Size: 3.5 $\mu$ m		Particle Size: 5 $\mu$ m	
	Dimension	P/N (3/pk)	Dimension	P/N (3/pk)
C <sub>18</sub>	4.6 $\times$ 100 mm	<a href="#">186002675</a>	4.6 $\times$ 150 mm	<a href="#">186002679</a>
	4.6 $\times$ 150 mm	<a href="#">186002676</a>	4.6 $\times$ 250 mm	<a href="#">186002680</a>
C <sub>8</sub>	4.6 $\times$ 100 mm	<a href="#">186002740</a>	4.6 $\times$ 150 mm	<a href="#">186002744</a>
	4.6 $\times$ 150 mm	<a href="#">186002741</a>	4.6 $\times$ 250 mm	<a href="#">186002745</a>

\*Each Method Validation Kit contains 3 columns, each from a different batch.

### SunFire VanGuard Cartridges\*

	Particle Size: 2.5 $\mu$ m		Particle Size: 3.5 $\mu$ m		Particle Size: 5 $\mu$ m	
	Dimension	P/N (3/pk)	Dimension	P/N (3/pk)	Dimension	P/N (3/pk)
C <sub>18</sub>	2.1 $\times$ 5 mm	<a href="#">186007691</a>	2.1 $\times$ 5 mm	<a href="#">186007694</a>	2.1 $\times$ 5 mm	<a href="#">186007697</a>
	3.9 $\times$ 5 mm	<a href="#">186007693</a>	3.9 $\times$ 5 mm	<a href="#">186007696</a>	3.9 $\times$ 5 mm	<a href="#">186007699</a>
C <sub>8</sub>	2.1 $\times$ 5 mm	<a href="#">186007700</a>	2.1 $\times$ 5 mm	<a href="#">186007703</a>	2.1 $\times$ 5 mm	<a href="#">186007706</a>
	3.9 $\times$ 5 mm	<a href="#">186007702</a>	3.9 $\times$ 5 mm	<a href="#">186007705</a>	3.9 $\times$ 5 mm	<a href="#">186007708</a>

\*Each cartridge listed requires use of Universal VanGuard Cartridge Holder (Listed below, p/n [186007949](#))

### Universal VanGuard Cartridge Holder

Description	P/N (1/pk)
Universal VanGuard Cartridge Holder	<a href="#">186007949</a>



**APPLICATION AREA:** Trap Peptides After Pepsin Digestion, Before Analytical Column

"Very easy-to-use, plug-and-play type of guard, we use it (VanGuard column) to trap peptides after on-column pepsin digestion before separation on an analytical column. The guard also serves as a tool to desalt prior to mass spectrometric analysis. Very reliable and reproducible results. Great value for the money!"

**REVIEWER:** George Bou-Assaf

**ORGANIZATION:** Biogen

# Symmetry Columns

Symmetry™ Columns exceed the standards for HPLC column performance. To ensure their optimum performance, they are packed with high-purity silica using stringently controlled manufacturing processes. No other silica-based LC column brand can match the column-to-column and batch-to-batch reproducibility of Symmetry Columns.



- Symmetry C<sub>18</sub> and C<sub>8</sub> Columns deliver maximum reproducibility
- SymmetryShield RP18 and RP8 Columns provide superior peak shape
- Symmetry300 C<sub>18</sub> and C<sub>4</sub> Columns offer high recoveries of peptides and proteins

## Column Characteristics

	Symmetry C <sub>8</sub> and SymmetryPrep C <sub>8</sub>	Symmetry C <sub>18</sub> and SymmetryPrep C <sub>18</sub>	SymmetryShield RP8	SymmetryShield RP18	Symmetry300 C <sub>4</sub>	Symmetry300 C <sub>18</sub>
	HPLC: 3.5, 5, 7 μm	HPLC: 3.5, 5, 7 μm	HPLC: 3.5, 5, 7 μm	HPLC: 3.5, 5, 7 μm	HPLC: 3.5, 5 μm	HPLC: 3.5, 5 μm
Ligand Benefit	General purpose, highly reproducible, similar selectivity to C <sub>18</sub> with slightly less retention	General purpose and highly reproducible, balanced retention for acids, bases, and neutrals	Alternate selectivity compared to straight chain C <sub>18</sub> , particularly with phenolic analytes. Provides reduced silanol activity ("shielding") to improve peak shape and resolution comparably	Alternate selectivity compared to straight chain C <sub>18</sub> , particularly with phenolic analytes. Provides reduced silanol activity ("shielding") to improve peak shape and resolution comparably	Wide-pore particle. Good retention of larger (> 1kD) molecules versus C <sub>18</sub>	Wide-pore particle. Good retention of large molecules (> 1kD)
Particle/Ligand						
Carbon Load*	12%	19%	15%	17%	2.8%	8.5%
Endcapped	Yes	Yes	Yes	Yes	Yes	Yes
USP Class No.	L7	L1	L1	L1	L26	L1
Performance Standards	Neutrals QC Reference Material p/n: <a href="#">186006360</a>	Neutrals QC Reference Material p/n: <a href="#">186006360</a>	Neutrals QC Reference Material p/n: <a href="#">186006360</a>	Neutrals QC Reference Material p/n: <a href="#">186006360</a>	MassPREP Protein Standard Mix p/n: <a href="#">186004900</a>	Cytochrome c Digestion Standard p/n: <a href="#">186006371</a>
Application Standards	Reversed-Phase QC Reference Material p/n: <a href="#">186006363</a>	Reversed-Phase QC Reference Material p/n: <a href="#">186006363</a>	Reversed-Phase QC Reference Material p/n: <a href="#">186006363</a>	Reversed-Phase QC Reference Material p/n: <a href="#">186006363</a>	MassPREP Protein Standard Mix p/n: <a href="#">186004900</a>	Peptide Retention Standard p/n: <a href="#">186006555</a>

\*Expected or approximate value.

## Ordering Information

### Symmetry, SymmetryShield, and Symmetry300 Columns

Symmetry C <sub>18</sub>					
ANALYTICAL COLUMNS					
Particle Size: 3.5 µm			Particle Size: 5 µm		
Dimension	P/N (1/pk)		Dimension	P/N (1/pk)	
2.1 × 30 mm	<a href="#">WAT058973</a>		2.1 × 50 mm	<a href="#">186000206</a>	
2.1 × 50 mm	<a href="#">WAT200650</a>		2.1 × 100 mm	<a href="#">186002608</a>	
2.1 × 100 mm	<a href="#">WAT058965</a>		2.1 × 150 mm	<a href="#">WAT056975</a>	
2.1 × 150 mm	<a href="#">WAT106005</a>		3.0 × 150 mm	<a href="#">WAT054200</a>	
3.0 × 50 mm	<a href="#">186002612</a>		3.0 × 250 mm	<a href="#">186000690</a>	
3.0 × 100 mm	<a href="#">186000696</a>		3.9 × 20 mm /S	<a href="#">186002086</a>	
3.0 × 150 mm	<a href="#">186000695</a>		3.9 × 150 mm	<a href="#">WAT046980</a>	
3.9 × 20 mm /S	<a href="#">186002082</a>		4.6 × 20 mm /S	<a href="#">186002094</a>	
4.6 × 30 mm	<a href="#">186000271</a>		4.6 × 50 mm	<a href="#">186000207</a>	
4.6 × 50 mm	<a href="#">WAT200625</a>		4.6 × 100 mm	<a href="#">186002616</a>	
4.6 × 75 mm	<a href="#">WAT066224</a>		4.6 × 150 mm	<a href="#">WAT045905</a>	
4.6 × 100 mm	<a href="#">WAT066220</a>		4.6 × 250 mm	<a href="#">WAT054275</a>	
4.6 × 150 mm	<a href="#">WAT200632</a>				
4.6 × 250 mm	<a href="#">186005794</a>				

PREPARATIVE COLUMNS					
Particle Size: 5 µm			Particle Size: 7 µm		
Dimension	Type	P/N (1/pk)	Dimension	Type	P/N (1/pk)
7.8 × 10 mm	Guard Cartridge	<a href="#">186000711</a> <sup>5</sup>	7.8 × 10 mm	Guard Cartridge	<a href="#">186000713</a> <sup>5</sup>
7.8 × 50 mm	Column	<a href="#">186000208</a>	7.8 × 150 mm	Column	<a href="#">WAT066288</a>
7.8 × 100 mm	Column	<a href="#">186000209</a>	7.8 × 300 mm	Column	<a href="#">WAT066235</a>
19 × 10 mm	Guard Cartridge	<a href="#">186000715</a> <sup>2</sup>	19 × 10 mm	Guard Cartridge	<a href="#">186000717</a> <sup>2</sup>
19 × 50 mm	Column	<a href="#">186000210</a>	19 × 150 mm	Column	<a href="#">WAT066240</a>
19 × 100 mm	Column	<a href="#">186000211</a>	19 × 300 mm	Column	<a href="#">WAT066245</a>
30 × 100 mm	Column	<a href="#">186000236</a>			

<sup>2</sup>Requires 19 × 10 mm Cartridge Holder, p/n: [186000709](#).

<sup>5</sup>Requires 7.8 × 10 mm Cartridge Holder, p/n: [186000708](#).

Symmetry, SymmetryShield, and Symmetry300 Columns *Continued*

Symmetry C <sub>8</sub> ANALYTICAL COLUMNS			
Particle Size: 3.5 µm		Particle Size: 5 µm	
Dimension	P/N (1/pk)	Dimension	P/N (1/pk)
2.1 × 50 mm	<a href="#">WAT200624</a>	2.1 × 100 mm	<a href="#">186002609</a>
2.1 × 100 mm	<a href="#">WAT058961</a>	2.1 × 150 mm	<a href="#">WAT056955</a>
2.1 × 150 mm	<a href="#">WAT106011</a>	3.0 × 150 mm	<a href="#">WAT054230</a>
3.0 × 100 mm	<a href="#">186000698</a>	3.0 × 250 mm	<a href="#">186000691</a>
3.0 × 150 mm	<a href="#">186000697</a>	3.9 × 20 mm /S	<a href="#">186002087</a>
4.6 × 30 mm	<a href="#">186000270</a>	3.9 × 150 mm	<a href="#">WAT046970</a>
4.6 × 50 mm	<a href="#">WAT200620</a>	4.6 × 50 mm	<a href="#">186000213</a>
4.6 × 75 mm	<a href="#">WAT066200</a>	4.6 × 100 mm	<a href="#">186002617</a>
4.6 × 100 mm	<a href="#">WAT066204</a>	4.6 × 150 mm	<a href="#">WAT045995</a>
4.6 × 150 mm	<a href="#">WAT200630</a>	4.6 × 250 mm	<a href="#">WAT054270</a>

PREPARATIVE COLUMNS					
Particle Size: 5 µm			Particle Size: 7 µm		
Dimension	Type	P/N (1/pk)	Dimension	Type	P/N (1/pk)
7.8 × 10 mm	Guard Cartridge	<a href="#">186000712<sup>5</sup></a>	7.8 × 10 mm	Guard Cartridge	<a href="#">186000714<sup>5</sup></a>
7.8 × 50 mm	Column	<a href="#">186000214</a>	7.8 × 150 mm	Column	<a href="#">WAT066285</a>
7.8 × 100 mm	Column	<a href="#">186000215</a>	7.8 × 300 mm	Column	<a href="#">WAT066225</a>
19 × 100 mm	Column	<a href="#">186000229</a>	19 × 10 mm	Guard Cartridge	<a href="#">186000718<sup>2</sup></a>
30 × 50 mm	Column	<a href="#">186000237</a>	19 × 150 mm	Column	<a href="#">WAT066228</a>
30 × 100 mm	Column	<a href="#">186000238</a>	19 × 300 mm	Column	<a href="#">WAT066230</a>
30 × 100 mm	Column	<a href="#">186000236</a>			

Symmetry Shield RP18 ANALYTICAL COLUMNS			
Particle Size: 3.5 µm		Particle Size: 5 µm	
Dimension	P/N (1/pk)	Dimension	P/N (1/pk)
2.1 × 50 mm	<a href="#">186000172</a>	2.1 × 50 mm	<a href="#">186000217</a>
2.1 × 100 mm	<a href="#">186000173</a>	2.1 × 100 mm	<a href="#">186000998</a>
2.1 × 150 mm	<a href="#">186000174</a>	2.1 × 150 mm	<a href="#">186000111</a>
3.0 × 100 mm	<a href="#">186000700</a>	3.0 × 150 mm	<a href="#">186000692</a>
3.0 × 150 mm	<a href="#">186000699</a>	3.0 × 250 mm	<a href="#">186000693</a>
3.9 × 20 mm /S	<a href="#">186002084</a>	3.9 × 150 mm	<a href="#">186000108</a>
4.6 × 50 mm	<a href="#">186000177</a>	4.6 × 50 mm	<a href="#">186000218</a>
4.6 × 75 mm	<a href="#">186000178</a>	4.6 × 100 mm	<a href="#">186002618</a>
4.6 × 100 mm	<a href="#">186000179</a>	4.6 × 150 mm	<a href="#">186000109</a>
4.6 × 150 mm	<a href="#">186000180</a>	4.6 × 250 mm	<a href="#">186000112</a>

PREPARATIVE COLUMNS					
Particle Size: 5 µm			Particle Size: 7 µm		
Dimension	Type	P/N (1/pk)	Dimension	Type	P/N (1/pk)
19 × 10 mm	Guard Cartridge	<a href="#">186001835<sup>2</sup></a>	19 × 150 mm	Column	<a href="#">186001839</a>
19 × 50 mm	Column	<a href="#">186001836</a>	19 × 300 mm	Column	<a href="#">186001840</a>
19 × 100 mm	Column	<a href="#">186001837</a>			
19 × 150 mm	Column	<a href="#">186001838</a>			

<sup>2</sup>Requires 19 × 10 mm Cartridge Holder, p/n: [186000709](#).

<sup>5</sup>Requires 7.8 × 10 mm Cartridge Holder, p/n: [186000708](#).



Symmetry, SymmetryShield, and Symmetry300 Columns *Continued*

Symmetry Shield RP8	ANALYTICAL COLUMNS					
	Particle Size: 3.5 $\mu\text{m}$			Particle Size: 5 $\mu\text{m}$		
	Dimension	P/N (1/pk)		Dimension	P/N (1/pk)	
	2.1 $\times$ 50 mm	<a href="#">WAT094257</a>		2.1 $\times$ 150 mm	<a href="#">WAT094245</a>	
	2.1 $\times$ 100 mm	<a href="#">WAT058969</a>		3.0 $\times$ 150 mm	<a href="#">WAT094243</a>	
	2.1 $\times$ 150 mm	<a href="#">WAT106008</a>		3.9 $\times$ 20 mm JS	<a href="#">186002089</a>	
	4.6 $\times$ 50 mm	<a href="#">WAT094260</a>		3.9 $\times$ 150 mm	<a href="#">WAT200655</a>	
	4.6 $\times$ 75 mm	<a href="#">WAT094263</a>		4.6 $\times$ 50 mm	<a href="#">186000224</a>	
	4.6 $\times$ 100 mm	<a href="#">WAT094266</a>		4.6 $\times$ 100 mm	<a href="#">186002619</a>	
	4.6 $\times$ 150 mm	<a href="#">WAT094269</a>		4.6 $\times$ 150 mm	<a href="#">WAT200662</a>	
				4.6 $\times$ 250 mm	<a href="#">WAT200670</a>	

PREPARATIVE COLUMNS						
Particle Size: 5 $\mu\text{m}$				Particle Size: 7 $\mu\text{m}$		
Dimension	Type	P/N (1/pk)		Dimension	Type	P/N (1/pk)
19 $\times$ 10 mm	Guard Cartridge	<a href="#">186001841</a> <sup>2</sup>		19 $\times$ 150 mm	Column	<a href="#">186001845</a>
19 $\times$ 50 mm	Column	<a href="#">186001842</a>		19 $\times$ 300 mm	Column	<a href="#">186001846</a>
19 $\times$ 100 mm	Column	<a href="#">186001843</a>				
19 $\times$ 150 mm	Column	<a href="#">186001844</a>				

Symmetry300 C <sub>18</sub>	ANALYTICAL COLUMNS					
	Particle Size: 3.5 $\mu\text{m}$			Particle Size: 5 $\mu\text{m}$		
	Dimension	P/N (1/pk)		Dimension	P/N (1/pk)	
	2.1 $\times$ 50 mm	<a href="#">186000187</a>		2.1 $\times$ 150 mm	<a href="#">WAT106172</a>	
	2.1 $\times$ 100 mm	<a href="#">186000188</a>		4.6 $\times$ 50 mm	<a href="#">WAT106209</a>	
	2.1 $\times$ 150 mm	<a href="#">186000200</a>		4.6 $\times$ 150 mm	<a href="#">WAT106157</a>	
	4.6 $\times$ 50 mm	<a href="#">186000201</a>		4.6 $\times$ 250 mm	<a href="#">WAT106151</a>	
	4.6 $\times$ 75 mm	<a href="#">186000189</a>				
	4.6 $\times$ 100 mm	<a href="#">186000190</a>				
	4.6 $\times$ 150 mm	<a href="#">186000197</a>				

PREPARATIVE COLUMNS						
Particle Size: 5 $\mu\text{m}$						
Dimension	Type	P/N (1/pk)				
19 $\times$ 10 mm	Guard Cartridge	<a href="#">186001847</a> <sup>2</sup>				
19 $\times$ 50 mm	Column	<a href="#">186001848</a>				
19 $\times$ 100 mm	Column	<a href="#">186001849</a>				
19 $\times$ 150 mm	Column	<a href="#">186001850</a>				

<sup>2</sup>Requires 19  $\times$  10 mm Cartridge Holder, p/n: [186000709](#).<sup>3</sup>Requires 7.8  $\times$  10 mm Cartridge Holder, p/n: [186000708](#).

Symmetry, SymmetryShield, and Symmetry300 Columns *Continued*

Symmetry300 C <sub>4</sub>	ANALYTICAL COLUMNS			
	Particle Size: 3.5 µm		Particle Size: 5 µm	
	Dimension	P/N (1/pk)	Dimension	P/N (1/pk)
	2.1 × 50 mm	<a href="#">186000277</a>	2.1 × 150 mm	<a href="#">186000285</a>
	2.1 × 100 mm	<a href="#">186000278</a>	3.9 × 150 mm	<a href="#">186000286</a>
	2.1 × 150 mm	<a href="#">186000279</a>	4.6 × 50 mm	<a href="#">186000287</a>
	4.6 × 50 mm	<a href="#">186000280</a>	4.6 × 150 mm	<a href="#">186000288</a>
	4.6 × 75 mm	<a href="#">186000281</a>	4.6 × 250 mm	<a href="#">186000289</a>
	4.6 × 100 mm	<a href="#">186000282</a>		
	4.6 × 150 mm	<a href="#">186000283</a>		

Symmetry, SymmetryShield, and Symmetry300 Method Validation Kits\*

	Particle Size: 3.5 µm		Particle Size: 5 µm	
	Dimension	P/N (3/pk)	Dimension	P/N (3/pk)
Symmetry C <sub>18</sub>	4.6 × 150 mm	<a href="#">WAT094240</a>	3.9 × 150 mm	<a href="#">WAT047210</a>
			4.6 × 150 mm	<a href="#">WAT054448</a>
			4.6 × 250 mm	<a href="#">WAT054450</a>
Symmetry C <sub>8</sub>	4.6 × 150 mm	<a href="#">WAT094237</a>	3.9 × 150 mm	<a href="#">WAT046955</a>
			4.6 × 150 mm	<a href="#">WAT054435</a>
			4.6 × 250 mm	<a href="#">WAT054438</a>
SymmetryShield RP18	4.6 × 150 mm	<a href="#">186000181</a>	4.6 × 150 mm	<a href="#">186000103</a>
			4.6 × 250 mm	<a href="#">186000102</a>
SymmetryShield RP8	4.6 × 150 mm	<a href="#">WAT094278</a>	4.6 × 250 mm	<a href="#">WAT210591</a>
Symmetry300 C <sub>18</sub>	4.6 × 150 mm	<a href="#">186000195</a>	3.9 × 150 mm	<a href="#">WAT106187</a>
			4.6 × 150 mm	<a href="#">WAT106190</a>
			4.6 × 250 mm	<a href="#">WAT106184</a>
Symmetry300 C <sub>4</sub>	4.6 × 150 mm	<a href="#">186000291</a>	3.9 × 150 mm	<a href="#">186000293</a>
			4.6 × 150 mm	<a href="#">186000294</a>
			4.6 × 250 mm	<a href="#">186000295</a>

\*Each Method Validation Kit contains 3 columns, each from a different batch.

Symmetry VanGuard Cartridges\*

	Particle Size: 3.5 µm		Particle Size: 5 µm	
	Dimension	P/N (3/pk)	Dimension	P/N (3/pk)
Symmetry C <sub>18</sub>	2.1 × 5 mm	<a href="#">186007725</a>	2.1 × 5 mm	<a href="#">186007729</a>
	3.9 × 5 mm	<a href="#">186007727</a>	3.9 × 5 mm	<a href="#">186007731</a>
Symmetry C <sub>8</sub>	2.1 × 5 mm	<a href="#">186007733</a>	2.1 × 5 mm	<a href="#">186007737</a>
	3.9 × 5 mm	<a href="#">186007735</a>	3.9 × 5 mm	<a href="#">186007739</a>
SymmetryShield RP18	2.1 × 5 mm	<a href="#">186007749</a>	2.1 × 5 mm	<a href="#">186007753</a>
	3.9 × 5 mm	<a href="#">186007751</a>	3.9 × 5 mm	<a href="#">186007755</a>
SymmetryShield RP8	2.1 × 5 mm	<a href="#">186007741</a>	2.1 × 5 mm	<a href="#">186007745</a>
	3.9 × 5 mm	<a href="#">186007743</a>	3.9 × 5 mm	<a href="#">186007747</a>
Symmetry300 C <sub>18</sub>	2.1 × 5 mm	<a href="#">186007709</a>	2.1 × 5 mm	<a href="#">186007713</a>
	3.9 × 5 mm	<a href="#">186007711</a>	3.9 × 5 mm	<a href="#">186007715</a>
Symmetry300 C <sub>4</sub>	2.1 × 5 mm	<a href="#">186007717</a>	2.1 × 5 mm	<a href="#">186007721</a>
	3.9 × 5 mm	<a href="#">186007719</a>	3.9 × 5 mm	<a href="#">186007723</a>

\*Each cartridge listed requires use of Universal VanGuard Cartridge Holder (Listed below, p/n [186007949](#))

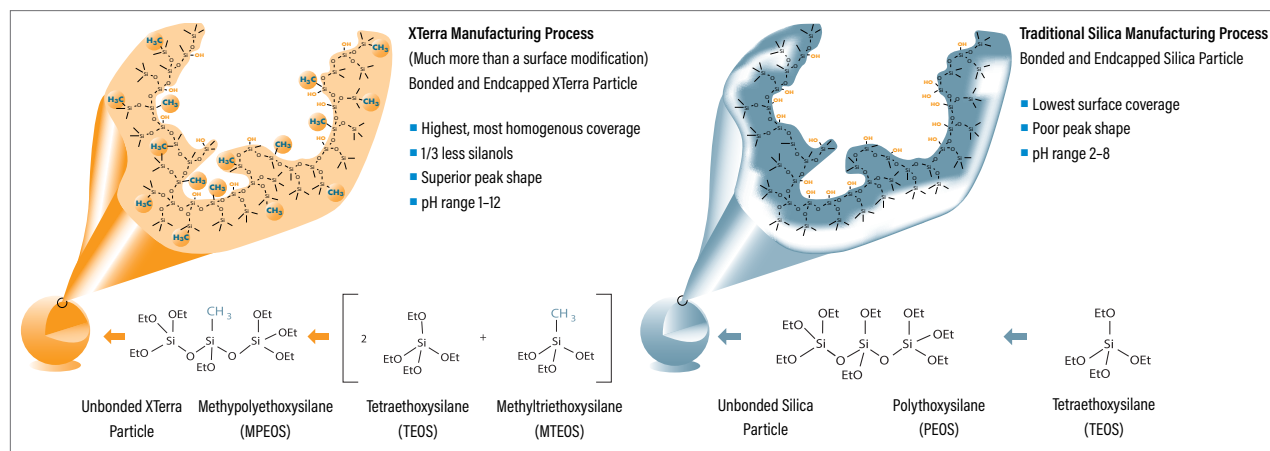
Universal VanGuard Cartridge Holder

Description	P/N (1/pk)
Universal VanGuard Cartridge Holder	<a href="#">186007949</a>

XTerra MS, Shield RP, and Phenyl Columns combine the best properties of silica- and polymeric-bonded phases with patented Hybrid Particle Technology (HPT), which replaces one out of every three silanol groups with a methyl group during particle synthesis. HPT overcomes the limitations of silica-based materials while maintaining its best attributes for mechanical strength, chemical resistance, and easy scale up from analytical to preparative chromatography.



## Traditional Silica vs. XTerra Manufacturing Process



## Column Characteristics

	MS C <sub>18</sub> , 125 Å	Shield RP18, 125 Å	MS C <sub>8</sub> , 125 Å	Shield RP8, 125 Å	Phenyl, 125 Å
	HPLC: 3.5, 5 µm	HPLC: 3.5, 5 µm	HPLC: 3.5, 5 µm	HPLC: 3.5, 5 µm	HPLC: 3.5, 5 µm
Ligand Benefit	General purpose, efficient, low MS-bleed delivers good compound retentivity for acids, bases and neutrals	Highly efficient, provides alternate selectivity compared to straight chain C <sub>18</sub> , particularly with phenolic analytes. Compatible with 100% aqueous-phase composition	General purpose, efficient, low MS-bleed and similar selectivity to MS C <sub>18</sub> , but delivers less compound retentivity	Highly efficient and similar selectivity to Shield RP18, but delivers less compound retentivity	Alternate selectivity versus straight chain MS C <sub>18</sub> , alternate selectivity, particularly in regard to polyaromatic compounds
Particle/Ligand					
Carbon Load*	15.5%	15%	12%	13.5%	12%
Endcapped	Yes	Yes	Yes	Yes	Yes
USP Class No.	L1	L1	L7	L7	L11
Performance Standards	Neutrals QC Reference Material p/n: <a href="#">186006360</a>	Neutrals QC Reference Material p/n: <a href="#">186006360</a>	Neutrals QC Reference Material p/n: <a href="#">186006360</a>	Neutrals QC Reference Material p/n: <a href="#">186006360</a>	Neutrals QC Reference Material p/n: <a href="#">186006360</a>
Application Standards	Reversed-Phase QC Reference Material p/n: <a href="#">186006363</a>	Reversed-Phase QC Reference Material p/n: <a href="#">186006363</a>	Reversed-Phase QC Reference Material p/n: <a href="#">186006363</a>	Reversed-Phase QC Reference Material p/n: <a href="#">186006363</a>	Reversed-Phase QC Reference Material p/n: <a href="#">186006363</a>

\*Expected or approximate value.

XTerra Columns

ANALYTICAL COLUMNS					
Particle Size: 2.5 µm*		Particle Size: 3.5 µm		Particle Size: 5 µm	
Dimension	P/N (1/pk)	Dimension	P/N (1/pk)	Dimension	P/N (1/pk)
2.1 × 30 mm	<a href="#">186000592</a>	2.1 × 30 mm	<a href="#">186000398</a>	2.1 × 20 mm JS	<a href="#">186001979</a>
4.6 × 20 mm JS	<a href="#">186001889</a>	2.1 × 50 mm	<a href="#">186000400</a>	2.1 × 50 mm	<a href="#">186000446</a>
4.6 × 30 mm	<a href="#">186000600</a>	2.1 × 100 mm	<a href="#">186000404</a>	2.1 × 100 mm	<a href="#">186000450</a>
4.6 × 50 mm	<a href="#">186000602</a>	2.1 × 150 mm	<a href="#">186000408</a>	2.1 × 150 mm	<a href="#">186000454</a>
4.6 × 75 mm	<a href="#">186000981</a>	3.0 × 50 mm	<a href="#">186000414</a>	2.1 × 250 mm	<a href="#">186000458</a>
		3.0 × 100 mm	<a href="#">186000418</a>	3.0 × 50 mm	<a href="#">186000462</a>
		3.0 × 150 mm	<a href="#">186000422</a>	3.0 × 100 mm	<a href="#">186000466</a>
		3.9 × 100 mm	<a href="#">186000426</a>	3.0 × 150 mm	<a href="#">186000470</a>
		4.6 × 30 mm	<a href="#">186000430</a>	3.0 × 250 mm	<a href="#">186000474</a>
		4.6 × 50 mm	<a href="#">186000432</a>	3.9 × 150 mm	<a href="#">186000478</a>
		4.6 × 100 mm	<a href="#">186000436</a>	4.6 × 50 mm	<a href="#">186000482</a>
		4.6 × 150 mm	<a href="#">186000440</a>	4.6 × 100 mm	<a href="#">186000486</a>
		4.6 × 250 mm	<a href="#">186001470</a>	4.6 × 150 mm	<a href="#">186000490</a>
				4.6 × 250 mm	<a href="#">186000494</a>

PREPARATIVE COLUMNS					
Particle Size: 5 µm			Particle Size: 10 µm		
Dimension	Type	P/N (1/pk)	Dimension	Type	P/N (1/pk)
7.8 × 10 mm	Guard Cartridge	<a href="#">186001168</a> <sup>5</sup>	7.8 × 10 mm	Guard Cartridge	<a href="#">186001172</a> <sup>5</sup>
7.8 × 50 mm	Column	<a href="#">186001152</a>	7.8 × 150 mm	Column	<a href="#">186001160</a>
7.8 × 100 mm	Column	<a href="#">186001156</a>	7.8 × 300 mm	Column	<a href="#">186001164</a>
7.8 × 150 mm	Column	<a href="#">186001475</a>	10 × 10 mm	Guard Cartridge	<a href="#">186001002</a> <sup>1</sup>
10 × 10 mm	Guard Cartridge	<a href="#">186001001</a> <sup>1</sup>	10 × 150 mm	OBD Column	<a href="#">186008129</a>
10 × 50 mm	OBD Column	<a href="#">186008103</a>	10 × 250 mm	OBD Column	<a href="#">186008133</a>
10 × 100 mm	OBD Column	<a href="#">186008107</a>	10 × 300 mm	OBD Column	<a href="#">186008137</a>
10 × 150 mm	OBD Column	<a href="#">186008141</a>	19 × 10 mm	Guard Cartridge	<a href="#">186001034</a> <sup>2</sup>
19 × 10 mm	Guard Cartridge	<a href="#">186001104</a> <sup>2</sup>	19 × 50 mm	OBD Column	<a href="#">186002254</a>
19 × 50 mm	OBD Column	<a href="#">186001930</a>	19 × 150 mm	OBD Column	<a href="#">186002255</a>
19 × 100 mm	OBD Column	<a href="#">186001934</a>	19 × 250 mm	OBD Column	<a href="#">186002259</a>
19 × 150 mm	OBD Column	<a href="#">186002379</a>	19 × 300 mm	OBD Column	<a href="#">186002263</a>
30 × 10 mm	Guard Cartridge	<a href="#">186006903</a> <sup>3</sup>	30 × 10 mm	Guard Cartridge	<a href="#">186006902</a> <sup>3</sup>
30 × 50 mm	OBD Column	<a href="#">186001938</a>	30 × 150 mm	OBD Column	<a href="#">186002267</a>
30 × 100 mm	OBD Column	<a href="#">186001942</a>	30 × 250 mm	OBD Column	<a href="#">186002271</a>
50 × 50 mm	OBD Column	<a href="#">186002218</a>	30 × 300 mm	OBD Column	<a href="#">186002275</a>
50 × 100 mm	OBD Column	<a href="#">186002222</a>	50 × 50 mm	OBD Column	<a href="#">186002279</a>
			50 × 150 mm	OBD Column	<a href="#">186002843</a>
			50 × 250 mm	OBD Column	<a href="#">186002847</a>

\*Recommended maximum pressure of 6000 psi (400 bar).

<sup>1</sup>Requires 10 × 10 mm Cartridge Holder, p/n: [289000779](#).

<sup>2</sup>Requires 19 × 10 mm Cartridge Holder, p/n: [186000709](#).

<sup>3</sup>Requires 30 × 10 mm Prep Guard Holder, p/n: [186006912](#).

<sup>5</sup>Requires 7.8 × 10 mm Cartridge Holder, p/n: [186000708](#).

XTerra Columns *Continued*

ANALYTICAL COLUMNS					
Particle Size: 2.5 µm*		Particle Size: 3.5 µm		Particle Size: 5 µm	
Dimension	P/N (1/pk)	Dimension	P/N (1/pk)	Dimension	P/N (1/pk)
4.6 × 50 mm	<a href="#">186000603</a>	2.1 × 50 mm	<a href="#">186000401</a>	2.1 × 50 mm	<a href="#">186000447</a>
		2.1 × 100 mm	<a href="#">186000405</a>	2.1 × 100 mm	<a href="#">186000451</a>
		2.1 × 150 mm	<a href="#">186000409</a>	2.1 × 150 mm	<a href="#">186000455</a>
		3.9 × 100 mm	<a href="#">186000427</a>	2.1 × 250 mm	<a href="#">186000459</a>
		4.6 × 50 mm	<a href="#">186000433</a>	3.9 × 150 mm	<a href="#">186000479</a>
		4.6 × 100 mm	<a href="#">186000437</a>	4.6 × 50 mm	<a href="#">186000483</a>
		4.6 × 150 mm	<a href="#">186000441</a>	4.6 × 100 mm	<a href="#">186000487</a>
		4.6 × 250 mm	<a href="#">186001471</a>	4.6 × 150 mm	<a href="#">186000491</a>
				4.6 × 250 mm	<a href="#">186000495</a>

PREPARATIVE COLUMNS					
Particle Size: 5 µm			Particle Size: 10 µm		
Dimension	Type	P/N (1/pk)	Dimension	Type	P/N (1/pk)
7.8 × 10 mm	Guard Cartridge	<a href="#">186001169</a> <sup>5</sup>	7.8 × 10 mm	Guard Cartridge	<a href="#">186001173</a> <sup>5</sup>
7.8 × 50 mm	Column	<a href="#">186001153</a>	7.8 × 150 mm	Column	<a href="#">186001161</a>
7.8 × 100 mm	Column	<a href="#">186001157</a>	7.8 × 300 mm	Column	<a href="#">186001165</a>
7.8 × 150 mm	Column	<a href="#">186001476</a>	10 × 150 mm	OBD Column	<a href="#">186008130</a>
10 × 50 mm	OBD Column	<a href="#">186008104</a>	10 × 250 mm	OBD Column	<a href="#">186008134</a>
10 × 150 mm	OBD Column	<a href="#">186008142</a>	10 × 300 mm	OBD Column	<a href="#">186008138</a>
19 × 10 mm	Guard Cartridge	<a href="#">186001105</a> <sup>2</sup>	19 × 10 mm	Guard Cartridge	<a href="#">186001035</a> <sup>2</sup>
19 × 50 mm	OBD Column	<a href="#">186001931</a>	19 × 150 mm	OBD Column	<a href="#">186002256</a>
19 × 100 mm	OBD Column	<a href="#">186001935</a>	19 × 250 mm	OBD Column	<a href="#">186002260</a>
19 × 150 mm	OBD Column	<a href="#">186002380</a>	19 × 300 mm	OBD Column	<a href="#">186002264</a>
30 × 10 mm	Guard Cartridge	<a href="#">186006904</a> <sup>3</sup>	30 × 150 mm	OBD Column	<a href="#">186002268</a>
30 × 75 mm	OBD Column	<a href="#">186002388</a>	30 × 250 mm	OBD Column	<a href="#">186002272</a>
30 × 100 mm	OBD Column	<a href="#">186001943</a>	30 × 300 mm	OBD Column	<a href="#">186002276</a>
50 × 50 mm	OBD Column	<a href="#">186002219</a>	50 × 50 mm	OBD Column	<a href="#">186002280</a>
50 × 100 mm	OBD Column	<a href="#">186002223</a>	50 × 150 mm	OBD Column	<a href="#">186002844</a>

\*Recommended maximum pressure of 6000 psi (400 bar).

<sup>1</sup>Requires 10 × 10 mm Cartridge Holder, p/n: [289000779](#).

<sup>2</sup>Requires 19 × 10 mm Cartridge Holder, p/n: [186000709](#).

<sup>3</sup>Requires 30 × 10 mm Prep Guard Holder, p/n: [186006912](#).

<sup>5</sup>Requires 7.8 × 10 mm Cartridge Holder, p/n: [186000708](#).

Shield RP18		ANALYTICAL COLUMNS			
		Particle Size: 3.5 µm		Particle Size: 5 µm	
Dimension	P/N (1/pk)	Dimension	P/N (1/pk)	Dimension	P/N (1/pk)
2.1 × 20 mm /S	<a href="#">186001925</a>	2.1 × 50 mm	<a href="#">186000448</a>	2.1 × 50 mm	<a href="#">186000448</a>
2.1 × 50 mm	<a href="#">186000402</a>	2.1 × 100 mm	<a href="#">186000452</a>	2.1 × 100 mm	<a href="#">186000452</a>
2.1 × 100 mm	<a href="#">186000406</a>	2.1 × 150 mm	<a href="#">186000456</a>	2.1 × 150 mm	<a href="#">186000456</a>
2.1 × 150 mm	<a href="#">186000410</a>	2.1 × 250 mm	<a href="#">186000460</a>	2.1 × 250 mm	<a href="#">186000460</a>
3.0 × 50 mm	<a href="#">186000416</a>	3.0 × 50 mm	<a href="#">186000464</a>	3.0 × 50 mm	<a href="#">186000464</a>
3.0 × 100 mm	<a href="#">186000420</a>	3.0 × 100 mm	<a href="#">186000468</a>	3.0 × 100 mm	<a href="#">186000468</a>
3.0 × 150 mm	<a href="#">186000424</a>	3.0 × 150 mm	<a href="#">186000472</a>	3.0 × 150 mm	<a href="#">186000472</a>
3.9 × 100 mm	<a href="#">186000428</a>	3.0 × 250 mm	<a href="#">186000476</a>	3.0 × 250 mm	<a href="#">186000476</a>
4.6 × 50 mm	<a href="#">186000434</a>	3.9 × 150 mm	<a href="#">186000480</a>	3.9 × 150 mm	<a href="#">186000480</a>
4.6 × 100 mm	<a href="#">186000438</a>	4.6 × 50 mm	<a href="#">186000484</a>	4.6 × 50 mm	<a href="#">186000484</a>
4.6 × 150 mm	<a href="#">186000442</a>	4.6 × 100 mm	<a href="#">186000488</a>	4.6 × 100 mm	<a href="#">186000488</a>
4.6 × 250 mm	<a href="#">186001472</a>	4.6 × 150 mm	<a href="#">186000492</a>	4.6 × 150 mm	<a href="#">186000492</a>
		4.6 × 250 mm	<a href="#">186000496</a>	4.6 × 250 mm	<a href="#">186000496</a>

PREPARATIVE COLUMNS					
Particle Size: 5 µm			Particle Size: 10 µm		
Dimension	Type	P/N (1/pk)	Dimension	Type	P/N (1/pk)
7.8 × 10 mm	Guard Cartridge	<a href="#">186001170<sup>5</sup></a>	7.8 × 10 mm	Guard Cartridge	<a href="#">186001174<sup>5</sup></a>
7.8 × 50 mm	Column	<a href="#">186001154</a>	7.8 × 150 mm	Column	<a href="#">186001162</a>
7.8 × 100 mm	Column	<a href="#">186001158</a>	7.8 × 300 mm	Column	<a href="#">186001166</a>
7.8 × 150 mm	Column	<a href="#">186001477</a>	10 × 10 mm	Guard Cartridge	<a href="#">186001007<sup>1</sup></a>
10 × 10 mm	Guard Cartridge	<a href="#">186001006<sup>1</sup></a>	10 × 150 mm	OBD Column	<a href="#">186008131</a>
10 × 50 mm	OBD Column	<a href="#">186008105</a>	10 × 250 mm	OBD Column	<a href="#">186008135</a>
10 × 100 mm	OBD Column	<a href="#">186008128</a>	10 × 300 mm	OBD Column	<a href="#">186008139</a>
10 × 150 mm	OBD Column	<a href="#">186008143</a>	19 × 10 mm	Guard Cartridge	<a href="#">186001036<sup>2</sup></a>
19 × 10 mm	Guard Cartridge	<a href="#">186001106<sup>2</sup></a>	19 × 150 mm	OBD Column	<a href="#">186002257</a>
19 × 50 mm	OBD Column	<a href="#">186001932</a>	19 × 250 mm	OBD Column	<a href="#">186002261</a>
19 × 100 mm	OBD Column	<a href="#">186001936</a>	19 × 300 mm	OBD Column	<a href="#">186002265</a>
19 × 150 mm	OBD Column	<a href="#">186002381</a>	30 × 10 mm	Guard Cartridge	<a href="#">186006905<sup>3</sup></a>
30 × 10 mm	Guard Cartridge	<a href="#">186006906<sup>3</sup></a>	30 × 150 mm	OBD Column	<a href="#">186002269</a>
30 × 50 mm	OBD Column	<a href="#">186001940</a>	30 × 250 mm	OBD Column	<a href="#">186002273</a>
30 × 75 mm	OBD Column	<a href="#">186002389</a>	30 × 300 mm	OBD Column	<a href="#">186002277</a>
30 × 100 mm	OBD Column	<a href="#">186001944</a>	50 × 50 mm	OBD Column	<a href="#">186002281</a>
50 × 50 mm	OBD Column	<a href="#">186002220</a>	50 × 250 mm	OBD Column	<a href="#">186002849</a>
50 × 100 mm	OBD Column	<a href="#">186002224</a>			

<sup>1</sup> Requires 10 × 10 mm Cartridge Holder, p/n: [289000779](#).

<sup>2</sup> Requires 19 × 10 mm Cartridge Holder, p/n: [186000709](#).

<sup>3</sup> Requires 30 × 10 mm Prep Guard Holder, p/n: [186006912](#).

<sup>5</sup> Requires 7.8 × 10 mm Cartridge Holder, p/n: [186000708](#).

XTerra Columns *Continued*

Shield RP8				ANALYTICAL COLUMNS			
Particle Size: 3.5 µm			Particle Size: 5 µm				
Dimension	P/N (1/pk)		Dimension	P/N (1/pk)			
3.0 × 50 mm	<a href="#">186000417</a>		2.1 × 150 mm	<a href="#">186000457</a>			
3.0 × 100 mm	<a href="#">186000421</a>		3.0 × 100 mm	<a href="#">186000469</a>			
3.0 × 150 mm	<a href="#">186000425</a>		3.0 × 150 mm	<a href="#">186000473</a>			
3.9 × 100 mm	<a href="#">186000429</a>		3.9 × 150 mm	<a href="#">186000481</a>			
4.6 × 50 mm	<a href="#">186000435</a>		4.6 × 50 mm	<a href="#">186000485</a>			
4.6 × 100 mm	<a href="#">186000439</a>		4.6 × 100 mm	<a href="#">186000489</a>			
4.6 × 150 mm	<a href="#">186000443</a>		4.6 × 150 mm	<a href="#">186000493</a>			
4.6 × 250 mm	<a href="#">186001473</a>		4.6 × 250 mm	<a href="#">186000497</a>			

PREPARATIVE COLUMNS					
Particle Size: 5 µm			Particle Size: 10 µm		
Dimension	Type	P/N (1/pk)	Dimension	Type	P/N (1/pk)
7.8 × 10 mm	Guard Cartridge	<a href="#">186001171</a> <sup>5</sup>	7.8 × 10 mm	Guard Cartridge	<a href="#">186001175</a> <sup>5</sup>
7.8 × 50 mm	Column	<a href="#">186001155</a>	7.8 × 150 mm	Column	<a href="#">186001163</a>
7.8 × 100 mm	Column	<a href="#">186001159</a>	7.8 × 300 mm	Column	<a href="#">186001167</a>
7.8 × 150 mm	Column	<a href="#">186001478</a>	10 × 10 mm	Guard Cartridge	<a href="#">186001009</a> <sup>1</sup>
10 × 10 mm	Guard Cartridge	<a href="#">186001008</a> <sup>1</sup>	10 × 150 mm	OBD Column	<a href="#">186008132</a>
10 × 50 mm	OBD Column	<a href="#">186008106</a>	10 × 250 mm	OBD Column	<a href="#">186008136</a>
10 × 150 mm	OBD Column	<a href="#">186008144</a>	10 × 300 mm	OBD Column	<a href="#">186008140</a>
19 × 10 mm	Guard Cartridge	<a href="#">186001107</a> <sup>2</sup>	19 × 10 mm	Guard Cartridge	<a href="#">186001037</a> <sup>2</sup>
19 × 100 mm	OBD Column	<a href="#">186001937</a>	19 × 150 mm	OBD Column	<a href="#">186002258</a>
19 × 150 mm	OBD Column	<a href="#">186002382</a>	19 × 250 mm	OBD Column	<a href="#">186002262</a>
30 × 50 mm	OBD Column	<a href="#">186001941</a>	19 × 300 mm	OBD Column	<a href="#">186002266</a>
30 × 75 mm	OBD Column	<a href="#">186002390</a>	30 × 150 mm	OBD Column	<a href="#">186002270</a>
30 × 100 mm	OBD Column	<a href="#">186001945</a>	30 × 250 mm	OBD Column	<a href="#">186002274</a>
50 × 50 mm	OBD Column	<a href="#">186002221</a>	30 × 300 mm	OBD Column	<a href="#">186002278</a>
50 × 100 mm	OBD Column	<a href="#">186002225</a>	50 × 50 mm	OBD Column	<a href="#">186002282</a>
			50 × 150 mm	OBD Column	<a href="#">186002846</a>
			50 × 250 mm	OBD Column	<a href="#">186002850</a>

<sup>1</sup>Requires 10 × 10 mm Cartridge Holder, p/n: [289000779](#).

<sup>2</sup>Requires 19 × 10 mm Cartridge Holder, p/n: [186000709](#).

<sup>5</sup>Requires 7.8 × 10 mm Cartridge Holder, p/n: [186000708](#).

## XTerra Columns *Continued*

Phenyl	ANALYTICAL COLUMNS			
	Particle Size: 3.5 $\mu$ m		Particle Size: 5 $\mu$ m	
	Dimension	P/N (1/pk)	Dimension	P/N (1/pk)
	2.1 $\times$ 50 mm	<a href="#">186001179</a>	3.9 $\times$ 150 mm	<a href="#">186001184</a>
	2.1 $\times$ 100 mm	<a href="#">186001180</a>	4.6 $\times$ 50 mm	<a href="#">186001144</a>
	2.1 $\times$ 150 mm	<a href="#">186001181</a>	4.6 $\times$ 100 mm	<a href="#">186001145</a>
	3.0 $\times$ 100 mm	<a href="#">186001142</a>	4.6 $\times$ 150 mm	<a href="#">186001146</a>
	3.0 $\times$ 150 mm	<a href="#">186001143</a>	4.6 $\times$ 250 mm	<a href="#">186001147</a>
	3.9 $\times$ 150 mm	<a href="#">186001178</a>		
	4.6 $\times$ 50 mm	<a href="#">186001138</a>		
	4.6 $\times$ 100 mm	<a href="#">186001139</a>		
	4.6 $\times$ 150 mm	<a href="#">186001140</a>		
	4.6 $\times$ 250 mm	<a href="#">186001474</a>		

## XTerra Columns Method Validation Kits\*

	Particle Size: 3.5 $\mu$ m		Particle Size: 5 $\mu$ m	
	Dimension	P/N (3/pk)	Dimension	P/N (3/pk)
MS C <sub>18</sub>	4.6 $\times$ 150 mm	<a href="#">186000826</a>	4.6 $\times$ 150 mm	<a href="#">186000829</a>
			4.6 $\times$ 250 mm	<a href="#">186000830</a>
Shield RP18	4.6 $\times$ 150 mm	<a href="#">186000861</a>	4.6 $\times$ 150 mm	<a href="#">186000862</a>
			4.6 $\times$ 250 mm	<a href="#">186000863</a>

\*Each Method Validation Kit contains 3 columns, each from a different batch.

## XTerra VanGuard Cartridges\*

	Particle Size: 2.5 $\mu$ m		Particle Size: 3.5 $\mu$ m		Particle Size: 5 $\mu$ m	
	Dimension	P/N (3/pk)	Dimension	P/N (3/pk)	Dimension	P/N (3/pk)
MS C <sub>18</sub>	2.1 $\times$ 5 mm	<a href="#">186007887</a>	2.1 $\times$ 5 mm	<a href="#">186007892</a>	2.1 $\times$ 5 mm	<a href="#">186007896</a>
	3.9 $\times$ 5 mm	<a href="#">186007889</a>	3.9 $\times$ 5 mm	<a href="#">186007894</a>	3.9 $\times$ 5 mm	<a href="#">186007899</a>
MS C <sub>8</sub>	2.1 $\times$ 5 mm	<a href="#">186007901</a>	2.1 $\times$ 5 mm	<a href="#">186007905</a>	2.1 $\times$ 5 mm	<a href="#">186007909</a>
	3.9 $\times$ 5 mm	<a href="#">186007903</a>	3.9 $\times$ 5 mm	<a href="#">186007735</a>	3.9 $\times$ 5 mm	<a href="#">186007739</a>
Shield RP18			2.1 $\times$ 5 mm	<a href="#">186007929</a>	2.1 $\times$ 5 mm	<a href="#">186007933</a>
			3.9 $\times$ 5 mm	<a href="#">186007931</a>	3.9 $\times$ 5 mm	<a href="#">186007935</a>
Shield RP8			2.1 $\times$ 5 mm	<a href="#">186007941</a>	3.9 $\times$ 5 mm	<a href="#">186007947</a>
			3.9 $\times$ 5 mm	<a href="#">186007943</a>		
Phenyl			2.1 $\times$ 5 mm	<a href="#">186007917</a>	2.1 $\times$ 5 mm	<a href="#">186007921</a>
			3.9 $\times$ 5 mm	<a href="#">186007919</a>	3.9 $\times$ 5 mm	<a href="#">186007923</a>

\*Each cartridge listed requires use of Universal VanGuard Cartridge Holder (Listed below, p/n [186007949](#))

## Universal VanGuard Cartridge Holder

Description	P/N (1/pk)
Universal VanGuard Cartridge Holder	<a href="#">186007949</a>



## Spherisorb Columns

Waters Spherisorb™ Columns are available in a wide range of particle sizes (3, 5, and 10 μm) and bonded phases. Their high quality bonded phases afford many different and unique separation selectivities.

Analytical columns are supplied with icommon, Parker-style, column end fittings.



### Column Characteristics

	ODS2 (C <sub>18</sub> ), 80 Å	ODS1 (C <sub>18</sub> ), 80 Å	ODSB (C <sub>18</sub> ), 80 Å	C <sub>8</sub> , 80 Å	C <sub>6</sub> , 80 Å	C <sub>11</sub> , 80 Å
	HPLC: 3, 5, 10 μm	HPLC: 3, 5, 10 μm	HPLC: 5 μm	HPLC: 3, 5, 10 μm	HPLC: 3, 5, 10 μm	HPLC: 3, 5, 10 μm
Ligand Benefit	General purpose, balanced retention for acids, bases, and neutrals	General purpose, balanced retention for acids, bases, and neutrals	General purpose, balanced retention for acids, bases, and neutrals	Good retention for strong hydrophobic compounds	Increased retention for strong hydrophobic compounds	Superior retention for very strong hydrophobic compounds
Particle/Ligand						
Ligand Density*	3.0 μmol/m <sup>2</sup>	1.5 μmol/m <sup>2</sup>	3.0 μmol/m <sup>2</sup>	3.1 μmol/m <sup>2</sup>	3.4 μmol/m <sup>2</sup>	3.0 μmol/m <sup>2</sup>
Carbon Load*	11.5%	6.2%	11.5%	5.8%	4.7%	2.2%
Endcapped	Yes	No	No	Yes	Yes	No
USP Class No.	L1	L1	L1	L7	L15	L13
Surface Area*	220 m <sup>2</sup> /g	220 m <sup>2</sup> /g	220 m <sup>2</sup> /g	220 m <sup>2</sup> /g	220 m <sup>2</sup> /g	220 m <sup>2</sup> /g

\*Expected or approximate value.

	NH <sub>2</sub> (Amino), 80 Å	Phenyl, 80 Å	CN (Nitrile), 80 Å	OD/CN, 80 Å	W (Silica), 80 Å	SCX, 80 Å	SAX, 80 Å
	HPLC: 3, 5, 10 μm	HPLC: 3, 5, 10 μm	HPLC: 3, 5, 10 μm	HPLC: 5 μm	HPLC: 3, 5, 10 μm	HPLC: 5, 10 μm	HPLC: 5, 10 μm
Ligand Benefit	Alternate retention for polar compounds	Better retention for aromatic compounds	Alternate selectivity for polar compounds	Alternate selectivity for polar compounds	No ligand, for use in cation exchange mode for retention of large highly polar and/or charged compounds	No ligand, for general purpose separation of polar compounds in normal phase mode	No ligand, for use in anion exchange mode for retention of large highly polar and/or charged compounds
Particle/Ligand							
Ligand Density*	2.6 μmol/m <sup>2</sup>	1.7 μmol/m <sup>2</sup>	3.3 μmol/m <sup>2</sup>	1.2 μmol/m <sup>2</sup>	—	—	—
Carbon Load*	1.9%	2.5%	3.1%	5%	N/A	4%	4%
Endcapped	No	No	No	Yes	No	No	No
USP Class No.	L8	L11	L10	—	L3	L9	L14
Surface Area*	220 m <sup>2</sup> /g	220 m <sup>2</sup> /g	220 m <sup>2</sup> /g	220 m <sup>2</sup> /g	220 m <sup>2</sup> /g	220 m <sup>2</sup> /g	220 m <sup>2</sup> /g

\*Expected or approximate value.

For Spherisorb Preparative Columns, please refer to [pages 295-298](#).

## Ordering Information

### Spherisorb Columns

ODS1					
ANALYTICAL COLUMNS					
Particle Size: 3 $\mu\text{m}$			Particle Size: 5 $\mu\text{m}$		
Dimension	P/N (1/pk)		Dimension	P/N (1/pk)	
2.0 $\times$ 100 mm	<a href="#">PSS833422</a>		4.0 $\times$ 125 mm	<a href="#">PSS845541</a>	
4.6 $\times$ 50 mm	<a href="#">PSS833411</a>		4.0 $\times$ 250 mm	<a href="#">PSS845542</a>	
4.6 $\times$ 100 mm	<a href="#">PSS833412</a>		4.6 $\times$ 100 mm	<a href="#">PSS830612</a>	
4.6 $\times$ 150 mm	<a href="#">PSS833413</a>		4.6 $\times$ 150 mm	<a href="#">PSS830613</a>	
			4.6 $\times$ 250 mm	<a href="#">PSS830615</a>	

PREPARATIVE COLUMNS					
Particle Size: 5 $\mu\text{m}$			Particle Size: 10 $\mu\text{m}$		
Dimension	Type	P/N (1/pk)	Dimension	Type	P/N (1/pk)
10 $\times$ 250 mm	OBD Column	<a href="#">186008284</a>	10 $\times$ 250 mm	OBD Column	<a href="#">186008285</a>
19 $\times$ 250 mm	OBD Column	<a href="#">186008846</a>	19 $\times$ 250 mm	OBD Column	<a href="#">186008857</a>

ODS2					
ANALYTICAL COLUMNS					
Particle Size: 3 $\mu\text{m}$			Particle Size: 5 $\mu\text{m}$		
Dimension	P/N (1/pk)		Dimension	P/N (1/pk)	
4.6 $\times$ 50 mm	<a href="#">PSS832111</a>		4.0 $\times$ 125 mm	<a href="#">PSS845543</a>	
4.6 $\times$ 100 mm	<a href="#">PSS832112</a>		4.0 $\times$ 250 mm	<a href="#">PSS845277</a>	
4.6 $\times$ 150 mm	<a href="#">PSS832113</a>		4.6 $\times$ 50 mm	<a href="#">PSS831911</a>	
			4.6 $\times$ 100 mm	<a href="#">PSS831912</a>	
			4.6 $\times$ 150 mm	<a href="#">PSS831913</a>	
			4.6 $\times$ 250 mm	<a href="#">PSS831915</a>	

PREPARATIVE COLUMNS					
Particle Size: 5 $\mu\text{m}$			Particle Size: 10 $\mu\text{m}$		
Dimension	Type	P/N (1/pk)	Dimension	Type	P/N (1/pk)
10 $\times$ 250 mm	OBD Column	<a href="#">186008292</a>	10 $\times$ 250 mm	OBD Column	<a href="#">186008294</a>
19 $\times$ 250 mm	OBD Column	<a href="#">186008847</a>	19 $\times$ 250 mm	OBD Column	<a href="#">186008858</a>

C <sub>8</sub>					
ANALYTICAL COLUMNS					
Particle Size: 3 $\mu\text{m}$			Particle Size: 5 $\mu\text{m}$		
Dimension	P/N (1/pk)		Dimension	P/N (1/pk)	
4.6 $\times$ 50 mm	<a href="#">PSS832211</a>		4.0 $\times$ 125 mm	<a href="#">PSS845280</a>	
4.6 $\times$ 100 mm	<a href="#">PSS832212</a>		4.0 $\times$ 250 mm	<a href="#">PSS845281</a>	
4.6 $\times$ 150 mm	<a href="#">PSS832213</a>		4.6 $\times$ 100 mm	<a href="#">PSS831812</a>	
			4.6 $\times$ 150 mm	<a href="#">PSS831813</a>	
			4.6 $\times$ 250 mm	<a href="#">PSS831815</a>	

PREPARATIVE COLUMNS					
Particle Size: 5 $\mu\text{m}$			Particle Size: 10 $\mu\text{m}$		
Dimension	Type	P/N (1/pk)	Dimension	Type	P/N (1/pk)
10 $\times$ 250 mm	OBD Column	<a href="#">186008291</a>	10 $\times$ 250 mm	OBD Column	<a href="#">186008297</a>
19 $\times$ 250 mm	OBD Column	<a href="#">186008848</a>	19 $\times$ 250 mm	OBD Column	<a href="#">186008859</a>

Spherisorb Columns *Continued*

C <sub>6</sub>	ANALYTICAL COLUMNS					
	Particle Size: 3 μm			Particle Size: 5 μm		
	Dimension	P/N (1/pk)		Dimension	P/N (1/pk)	
	4.6 × 150 mm	<a href="#">PSS833113</a>		4.0 × 125 mm	<a href="#">PSS845284</a>	
				4.6 × 100 mm	<a href="#">PSS831012</a>	
				4.6 × 250 mm	<a href="#">PSS831015</a>	
PREPARATIVE COLUMNS						
Particle Size: 5 μm			Particle Size: 10 μm			
Dimension	Type	P/N (1/pk)	Dimension	Type	P/N (1/pk)	
10 × 250 mm	OBD Column	<a href="#">186008288</a>	19 × 250 mm	OBD Column	<a href="#">186008860</a>	
19 × 250 mm	OBD Column	<a href="#">186008849</a>				

C <sub>1</sub>	ANALYTICAL COLUMNS					
	Particle Size: 5 μm					
				Dimension	P/N (1/pk)	
			4.6 × 100 mm	<a href="#">PSS832612</a>		
			4.6 × 150 mm	<a href="#">PSS832613</a>		
			4.6 × 250 mm	<a href="#">PSS832615</a>		
PREPARATIVE COLUMNS						
Particle Size: 5 μm			Particle Size: 10 μm			
Dimension	Type	P/N (1/pk)	Dimension	Type	P/N (1/pk)	
10 × 250 mm	OBD Column	<a href="#">186008295</a>	19 × 250 mm	OBD Column	<a href="#">186008861</a>	
19 × 250 mm	OBD Column	<a href="#">186008850</a>				

NH <sub>2</sub>	ANALYTICAL COLUMNS					
	Particle Size: 3 μm			Particle Size: 5 μm		
	Dimension	P/N (1/pk)		Dimension	P/N (1/pk)	
	2.0 × 100 mm	<a href="#">PSS832322</a>		4.0 × 250 mm	<a href="#">PSS845301</a>	
	4.6 × 50 mm	<a href="#">PSS832311</a>		4.6 × 150 mm	<a href="#">PSS831113</a>	
	4.6 × 100 mm	<a href="#">PSS832312</a>		4.6 × 250 mm	<a href="#">PSS831115</a>	
	4.6 × 150 mm	<a href="#">PSS832313</a>				
PREPARATIVE COLUMNS						
Particle Size: 5 μm			Particle Size: 10 μm			
Dimension	Type	P/N (1/pk)	Dimension	Type	P/N (1/pk)	
10 × 250 mm	OBD Column	<a href="#">186008289</a>	10 × 250 mm	OBD Column	<a href="#">186008299</a>	
19 × 250 mm	OBD Column	<a href="#">186008853</a>	19 × 250 mm	OBD Column	<a href="#">186008864</a>	

Spherisorb Columns *Continued*

Phenyl					
ANALYTICAL COLUMNS					
Particle Size: 3 $\mu$ m			Particle Size: 5 $\mu$ m		
Dimension	P/N (1/pk)		Dimension	P/N (1/pk)	
4.6 $\times$ 150 mm	<a href="#">PSS833713</a>		4.0 $\times$ 250 mm	<a href="#">PSS845293</a>	
			4.6 $\times$ 250 mm	<a href="#">PSS830815</a>	
PREPARATIVE COLUMNS					
Particle Size: 5 $\mu$ m			Particle Size: 10 $\mu$ m		
Dimension	Type	P/N (1/pk)	Dimension	Type	P/N (1/pk)
10 $\times$ 250 mm	OBD Column	<a href="#">186008286</a>	10 $\times$ 250 mm	OBD Column	<a href="#">186008300</a>
19 $\times$ 250 mm	OBD Column	<a href="#">186008854</a>	19 $\times$ 250 mm	OBD Column	<a href="#">186008865</a>

CN Normal Phase					
ANALYTICAL COLUMNS					
Particle Size: 3 $\mu$ m			Particle Size: 5 $\mu$ m		
Dimension	P/N (1/pk)		Dimension	P/N (1/pk)	
4.6 $\times$ 150 mm	<a href="#">PSS832413</a>		4.0 $\times$ 250 mm	<a href="#">PSS845297</a>	
			4.6 $\times$ 100 mm	<a href="#">PSS830912</a>	
			4.6 $\times$ 150 mm	<a href="#">PSS830913</a>	
			4.6 $\times$ 250 mm	<a href="#">PSS830915</a>	
PREPARATIVE COLUMNS					
Particle Size: 5 $\mu$ m			Particle Size: 10 $\mu$ m		
Dimension	Type	P/N (1/pk)	Dimension	Type	P/N (1/pk)
10 $\times$ 250 mm	OBD Column	<a href="#">186008287</a>	10 $\times$ 250 mm	OBD Column	<a href="#">186008298</a>
19 $\times$ 250 mm	OBD Column	<a href="#">186008852</a>	19 $\times$ 250 mm	OBD Column	<a href="#">186008863</a>

CN Reversed Phase			
ANALYTICAL COLUMNS			
Particle Size: 5 $\mu$ m			
		Dimension	P/N (1/pk)
		4.6 $\times$ 150 mm	<a href="#">PSS830908</a>
		4.6 $\times$ 250 mm	<a href="#">PSS830909</a>

Silica					
ANALYTICAL COLUMNS					
Particle Size: 3 $\mu$ m			Particle Size: 5 $\mu$ m		
Dimension	P/N (1/pk)		Dimension	P/N (1/pk)	
4.6 $\times$ 150 mm	<a href="#">PSS832013</a>		2.0 $\times$ 250 mm	<a href="#">PSS830125</a>	
			4.0 $\times$ 250 mm	<a href="#">PSS845540</a>	
			4.6 $\times$ 250 mm	<a href="#">PSS830115</a>	
PREPARATIVE COLUMNS					
Particle Size: 5 $\mu$ m			Particle Size: 10 $\mu$ m		
Dimension	Type	P/N (1/pk)	Dimension	Type	P/N (1/pk)
10 $\times$ 250 mm	OBD Column	<a href="#">186008281</a>	10 $\times$ 250 mm	OBD Column	<a href="#">186008282</a>
19 $\times$ 250 mm	OBD Column	<a href="#">186008851</a>	19 $\times$ 250 mm	OBD Column	<a href="#">186008862</a>

Spherisorb Columns *Continued*

SAX	ANALYTICAL COLUMNS		PREPARATIVE COLUMNS					
	Particle Size: 5 µm		Particle Size: 5 µm			Particle Size: 10 µm		
	Dimension	P/N (1/pk)	Dimension	Type	P/N (1/pk)	Dimension	Type	P/N (1/pk)
	4.0 × 250 mm	<a href="#">PSS845305</a>	10 × 250 mm	OBD Column	<a href="#">186008296</a>	10 × 250 mm	OBD Column	<a href="#">186008301</a>
	4.6 × 50 mm	<a href="#">PSS832711</a>	19 × 250 mm	OBD Column	<a href="#">186008855</a>	19 × 250 mm	OBD Column	<a href="#">186008866</a>
	4.6 × 150 mm	<a href="#">PSS832713</a>						
	4.6 × 250 mm	<a href="#">PSS832715</a>						

SCX	ANALYTICAL COLUMNS		PREPARATIVE COLUMNS					
	Particle Size: 5 µm		Particle Size: 5 µm			Particle Size: 10 µm		
	Dimension	P/N (1/pk)	Dimension	Type	P/N (1/pk)	Dimension	Type	P/N (1/pk)
	4.0 × 250 mm	<a href="#">PSS845309</a>	10 × 250 mm	OBD Column	<a href="#">186008302</a>	10 × 250 mm	OBD Column	<a href="#">186008303</a>
	4.6 × 50 mm	<a href="#">PSS837511</a>	19 × 250 mm	OBD Column	<a href="#">186008856</a>	19 × 250 mm	OBD Column	<a href="#">186008867</a>
	4.6 × 100 mm	<a href="#">PSS837512</a>						
	4.6 × 150 mm	<a href="#">PSS837513</a>						
	4.6 × 250 mm	<a href="#">PSS837515</a>						

OD/CN	ANALYTICAL COLUMNS	
	Particle Size: 5 µm	
	Dimension	P/N (1/pk)
	4.6 × 150 mm	<a href="#">PSS837813</a>
	4.6 × 250 mm	<a href="#">PSS837815</a>

Waters Spherisorb Guard Cartridges\*

Dimension	Type	Particle Size	Qty.	ODS1	ODS2	C <sub>8</sub>	C <sub>6</sub>	C <sub>1</sub>	NH <sub>2</sub>
10 × 4.6 mm	Guard	5 µm	3/pk	<a href="#">PSS830073</a>	<a href="#">PSS830053</a>	<a href="#">PSS830074</a>	<a href="#">PSS830075</a>	<a href="#">PSS830076</a>	<a href="#">PSS830079</a>
30 × 4.6 mm	Guard	5 µm	3/pk	—	<a href="#">PSS839458</a>	—	—	—	<a href="#">PSS839478</a>

Dimension	Type	Particle Size	Qty.	CN Normal Phase	W Silica	SAX	SCX
10 × 4.6 mm	Guard	5 µm	3/pk	<a href="#">PSS830077</a>	<a href="#">PSS830051</a>	<a href="#">PSS830055</a>	<a href="#">PSS830057</a>
30 × 4.6 mm	Guard	5 µm	3/pk	<a href="#">PSS839476</a>	<a href="#">PSS839451</a>	<a href="#">PSS839465</a>	<a href="#">PSS839471</a>

\*For the 10 × 4.6 mm guards, use either the In Line Guard Cartridge Holder (p/n: [PSS830008](#)) or an Extended Endfitting for 4.6 × 10 mm Guard Cartridge (p/n: [PSS614108](#)). The 30 × 4.6 mm guards require a Removable Endfitting (p/n: [PSS614100](#)) and a Column Coupler (p/n: [PSS614102](#)).

Spherisorb Guard Cartridge Holders\*

Description	Qty.	P/N
In Line Guard Cartridge Holder Kit for 4.6 × 10 mm Guards		<a href="#">PSS830008</a>
Extended Endfitting for Integral Guard Cartridge (for use with 4.6 × 10 mm guard cartridge)	1/pk	<a href="#">PSS614108</a>
Removable Cartridge Column Endfitting (for use with 30 × 10 mm guard cartridge)	2/pk	<a href="#">PSS614100</a>
Column Coupler (for use with 30 × 10 mm guard cartridge)	2/pk	<a href="#">PSS614102</a>

\*See Cartridge and Guard Columns, Fittings, and Accessories section for more additional detail ([page 240](#))

## Nova-Pak Columns

The bonded phases of Nova-Pak™ Columns, available in 4 and 6 µm particle sizes, offer high resolution and fast, efficient chromatography. When used with relatively short column lengths, the smaller particles reduce solvent consumption while retaining their ability to resolve complex mixtures. Steel analytical columns packed with 4 µm particles are available in 75, 150, and 300 mm lengths. Packed with high efficiency 6 µm particles, semi-preparative Prep Nova-Pak Columns provide an unparalleled range of separation possibilities. Their faster separations produce concentrated fractions, and they require less solvent, significantly reducing costs.



### Column Characteristics

	C <sub>8</sub> , 60 Å	C <sub>18</sub> , 60 Å	Phenyl, 60 Å	CN, 60 Å	Silica, 60 Å
	HPLC: 4 µm	HPLC: 4, 6 µm	HPLC: 4 µm	HPLC: 4 µm	HPLC: 4, 6 µm
Ligand Benefit	Better retention for strong hydrophobic compounds	Balanced retention for polar and nonpolar compounds	Better retention for aromatic compounds	Alternate retention for polar compounds	No ligand, best for polar compound retention when used in normal phase mode
Particle/Ligand					
Carbon Load*	4%	7%	5%	2%	N/A
Endcapped	Yes	Yes	Yes	Yes	No
USP Class No.	L7	L1	L11	L10	L3
Performance Standards	Neutrals QC Reference Material p/n: <a href="#">186006360</a>	Neutrals QC Reference Material p/n: <a href="#">186006360</a>	Neutrals QC Reference Material p/n: <a href="#">186006360</a>	—	—
Application Standards	Reversed-Phase QC Reference Material p/n: <a href="#">186006363</a>	Reversed-Phase QC Reference Material p/n: <a href="#">186006363</a>	Reversed-Phase QC Reference Material p/n: <a href="#">186006363</a>	—	—

\*Expected or approximate value.

### Ordering Information

#### Nova-Pak Columns

Nova-Pak C <sub>18</sub>	ANALYTICAL COLUMNS	
	Particle Size: 4 µm	
	Dimension	P/N (1/pk)
	2.1 × 150 mm	<a href="#">WAT023655</a>
	3.9 × 75 mm	<a href="#">WAT011670</a>
	3.9 × 150 mm	<a href="#">WAT086344</a>
	3.9 × 300 mm	<a href="#">WAT011695</a>
	4.6 × 150 mm	<a href="#">WAT044375</a>

Nova-Pak C <sub>18</sub>	PREPARATIVE COLUMNS	
	Particle Size: 6 µm	
	Dimension	P/N (1/pk)
	3.9 × 300 mm	<a href="#">WAT038500</a>
	7.8 × 300 mm	<a href="#">WAT025820</a>
	19 × 300 mm	<a href="#">WAT025822</a>

For Nova-Pak Preparative Columns, please refer to [page 299](#).

## Nova-Pak Columns *Continued*

Nova-Pak C <sub>8</sub>	ANALYTICAL COLUMNS	
	Particle Size: 4 μm	
	3.9 × 75 mm	<a href="#">WAT035877</a>
3.9 × 150 mm	<a href="#">WAT035876</a>	

Nova-Pak Phenyl	ANALYTICAL COLUMNS	
	Particle Size: 4 μm	
	Dimension	P/N (1/pk)
2.1 × 150 mm	<a href="#">WAT052740</a>	
3.9 × 75 mm	<a href="#">WAT011675</a>	
3.9 × 150 mm	<a href="#">WAT010656</a>	

Nova-Pak CN-HP	3.9 × 75 mm	<a href="#">WAT010270</a>
	3.9 × 150 mm	<a href="#">WAT044245</a>
	3.9 × 300 mm	<a href="#">WAT056920</a>

Nova-Pak Silica	2.1 × 150 mm	<a href="#">WAT052745</a>
	3.9 × 150 mm	<a href="#">WAT010025</a>

PREPARATIVE COLUMNS	
Particle Size: 6 μm	
Dimension	P/N (1/pk)
3.9 × 300 mm	<a href="#">WAT038501</a>
7.8 × 300 mm	<a href="#">WAT025821</a>
19 × 300 mm	<a href="#">WAT025823</a>

## Resolve Columns

The non-encapped Resolve Packing is significantly different compared to other Waters packing materials. The change in chromatographic behavior is most commonly noticed with polar compounds, which are typically more retained. For alkaline compounds, ion-pairing reagents are added to the mobile phase to reduce excessive tailing.



### Column Characteristics


	C <sub>8</sub> , 90 Å	C <sub>18</sub> , 90 Å	Silica, 90 Å	CN, 90 Å
	HPLC: 5, 10 μm	HPLC: 5, 10 μm	HPLC: 5, 10 μm	HPLC: 10 μm
Ligand Benefit	General purpose, balanced retention for acids, bases and neutrals. Less retentive than C <sub>18</sub>	General purpose, balanced retention for acids, bases and neutrals	No ligand, best for polar compound retention when used in normal phase mode	Alternate selectivity for polar molecules
Carbon Load*	5%	10%	10%	3%
Encapped	No	No	No	No
USP Class No.	L7	L1	L3	L10
Performance Standards	Neutrals QC Reference Material p/n: <a href="#">186006360</a>	Neutrals QC Reference Material p/n: <a href="#">186006360</a>	—	—
Application Standards	Reversed-Phase QC Reference Material p/n: <a href="#">186006363</a>	Reversed-Phase QC Reference Material p/n: <a href="#">186006363</a>	—	—

\*Expected or approximate value.

## Ordering Information

### Resolve Columns

C <sub>18</sub>	Particle Size: 5 μm	
	Dimension	P/N (1/pk)
	3.9 × 150 mm	<a href="#">WAT085711</a>
3.9 × 300 mm	<a href="#">WAT011740</a>	

 For Resolve Radial Compression Columns and PrepPak™ Cartridges, please [refer to page 307](#).

## Delta-Pak Columns

Delta-Pak Columns are ideal for separating and isolating peptides, proteins, and natural products. Optimized for large molecule separations and available in two pore sizes, they provide consistent and predictable scaling from milligram quantities to gram quantities between column formats.



### Column Characteristics

	$C_{18}$ , 100 Å	$C_{18}$ , 300 Å	$C_4$ , 100 Å	$C_4$ , 300 Å
	HPLC: 5, 15 $\mu$ m	HPLC: 5, 15 $\mu$ m	HPLC: 5, 15 $\mu$ m	HPLC: 5, 15 $\mu$ m
Ligand Benefit	General purpose, balanced retention for acids, bases, and neutrals	Wide-pore, general purpose, balanced retention for acids, bases, and neutral compounds	General purpose, provides less retention of hydrophobic compounds versus $C_{18}$	Wide-pore, provides less retention of larger hydrophobic compounds versus $C_{18}$
Carbon Load*	17%	7%	7%	3%
Endcapped	Yes	Yes	Yes	Yes
USP Class No.	L1	L1	L26	L26
Performance Standards	Neutrals QC Reference Material p/n: <a href="#">186006360</a>	Neutrals QC Reference Material p/n: <a href="#">186006360</a>	MassPREP Protein Standard Mix p/n: <a href="#">186004900</a>	MassPREP Protein Standard Mix p/n: <a href="#">186004900</a>
Application Standards	Reversed-Phase QC Reference Material p/n: <a href="#">186006363</a>	Reversed-Phase QC Reference Material p/n: <a href="#">186006363</a>	MassPREP Protein Standard Mix p/n: <a href="#">186004900</a>	MassPREP Protein Standard Mix p/n: <a href="#">186004900</a>

\*Expected or approximate value.

### Ordering Information

#### Delta-Pak Columns

Delta-Pak $C_{18}$ , 300 Å	ANALYTICAL COLUMNS	Delta-Pak $C_4$ , 300 Å	ANALYTICAL COLUMNS
	Particle Size: 5 $\mu$ m		Particle Size: 5 $\mu$ m
	Dimension		Dimension
	P/N (1/pk)		P/N (1/pk)
	3.9 × 150 mm		3.9 × 150 mm
	<a href="#">WAT011793</a>		<a href="#">WAT011794</a>
	PREPARATIVE COLUMNS		PREPARATIVE COLUMNS
	Particle Size: 15 $\mu$ m		Particle Size: 15 $\mu$ m
	Dimension		Dimension
	P/N (1/pk)		P/N (1/pk)
	3.9 × 300 mm		3.9 × 300 mm
	<a href="#">WAT011802</a>		<a href="#">WAT011812</a>
	7.8 × 300 mm		7.8 × 300 mm
	<a href="#">WAT011803</a>		<a href="#">WAT011813</a>
	19 × 300 mm		19 × 300 mm
	<a href="#">WAT011804</a>		<a href="#">WAT011814</a>
	30 × 300 mm		30 × 300 mm
	<a href="#">WAT011805</a>		<a href="#">WAT011815</a>

For Delta-Pak Preparative Columns, please refer to [page 301](#).



## Delta-Pak Columns *Continued*

Delta-Pak C <sub>18</sub> , 100 Å	PREPARATIVE COLUMNS	
	Particle Size: 15 µm	
	Dimension	P/N (1/pk)
	3.9 × 300 mm	<a href="#">WAT011797</a>
	7.8 × 300 mm	<a href="#">WAT011798</a>
	19 × 300 mm	<a href="#">WAT011799</a>
	30 × 300 mm	WAT011800
	50 × 300 mm	<a href="#">WAT011801</a>

Delta-Pak C <sub>8</sub> , 100 Å	PREPARATIVE COLUMNS	
	Particle Size: 15 µm	
	Dimension	P/N (1/pk)
	3.9 × 300 mm	<a href="#">WAT011807</a>
	7.8 × 300 mm	<a href="#">WAT011808</a>
	19 × 300 mm	<a href="#">WAT011809</a>
	30 × 300 mm	<a href="#">WAT011810</a>

## µBondapak/Bondapak Columns

Waters makes the only column that contains the µBondapak™ C<sub>18</sub> packing material. Other column manufacturers claim their products exhibit “µBondapak-like” selectivity. Yet none of them have ever passed Waters’ stringent QC batch tests. Since 1973, µBondapak and Bondapak™ packing materials demonstrate year-to-year reproducibility, which is why µBondapak remains among the most frequently referenced column brands.



### Column Characteristics

	C <sub>18</sub> , 125 Å	CN, 125 Å	NH <sub>2</sub> , 125 Å	Phenyl, 125 Å
	HPLC: 10 µm	HPLC: 10 µm	HPLC: 10 µm	HPLC: 10 µm
<b>Ligand Benefit</b>	General purpose, balanced retention for acids, bases, and neutrals	General purpose, contrasting selectivity for polar compounds versus C <sub>18</sub> . For use in normal or reversed-phase modes	Contrasting selectivity for polar compounds versus C <sub>18</sub> . For use in normal or reversed-phase modes	Alternate selectivity versus C <sub>18</sub> ; provides better retention of aromatic compounds
<b>Particle/Ligand</b>				
Carbon Load*	10%	6%	3.5%	8%
Endcapped	Yes	Yes	No	Yes
USP Class No.	L1	L1	L8	L11
Performance Standards	<b>Neutrals QC Reference Material</b> p/n: <a href="#">186006360</a>	—	—	<b>Neutrals QC Reference Material</b> p/n: <a href="#">186006360</a>
Application Standards	<b>Reversed-Phase QC Reference Material</b> p/n: <a href="#">186006363</a>	—	—	<b>Reversed-Phase QC Reference Material</b> p/n: <a href="#">186006363</a>

\*Expected or approximate value.

## Ordering Information


### μBondapak/Bondapak

C <sub>18</sub> , 125 Å	
ANALYTICAL COLUMNS	
Particle Size: 10 μm	
Dimension	P/N (1/pk)
3.9 × 150 mm	<a href="#">WAT086684</a>
3.9 × 300 mm	<a href="#">WAT027324</a>
4.6 × 150 mm	<a href="#">WAT044370</a>
4.6 × 300 mm	<a href="#">186000925</a>
PREPARATIVE COLUMNS	
Particle Size: 10 μm	
Dimension	P/N (1/pk)
3.9 × 150 mm	<a href="#">WAT086684</a>
3.9 × 300 mm	<a href="#">WAT027324</a>
4.6 × 150 mm	<a href="#">WAT044370</a>
4.6 × 300 mm	<a href="#">186000925</a>
7.8 × 300 mm	<a href="#">WAT084176</a>
19 × 150 mm	<a href="#">WAT088500</a>
19 × 300 mm	<a href="#">WAT025828</a>
Particle Size: 15-20 μm	
3.9 × 150 mm	<a href="#">WAT025875</a>
7.8 × 300 mm	<a href="#">WAT025832</a>
19 × 300 mm	<a href="#">WAT025834</a>

CN, 125 Å	
ANALYTICAL COLUMNS	
Particle Size: 10 μm	
Dimension	P/N (1/pk)
3.9 × 150 mm	<a href="#">WAT086688</a>
3.9 × 300 mm	<a href="#">WAT084042</a>
PREPARATIVE COLUMNS	
Particle Size: 10 μm	
Dimension	P/N (1/pk)
3.9 × 150 mm	<a href="#">WAT086688</a>
3.9 × 300 mm	<a href="#">WAT084042</a>
7.8 × 300 mm	<a href="#">WAT084177</a>

NH <sub>2</sub> , 125 Å	
ANALYTICAL COLUMNS	
Particle Size: 10 μm	
Dimension	P/N (1/pk)
3.9 × 300 mm	<a href="#">WAT084040</a>
PREPARATIVE COLUMNS	
Particle Size: 10 μm	
Dimension	P/N (1/pk)
3.9 × 300 mm	<a href="#">WAT084040</a>
7.8 × 300 mm	<a href="#">WAT084178</a>

Phenyl, 125 Å	
ANALYTICAL COLUMNS	
Particle Size: 10 μm	
Dimension	P/N (1/pk)
3.9 × 150 mm	<a href="#">WAT086680</a>
3.9 × 300 mm	<a href="#">WAT027198</a>
PREPARATIVE COLUMNS	
Particle Size: 10 μm	
Dimension	P/N (1/pk)
3.9 × 150 mm	<a href="#">WAT086680</a>
3.9 × 300 mm	<a href="#">WAT027198</a>
7.8 × 300 mm	<a href="#">WAT084179</a>

 For μBondapak/Bondapak and μPorasil/Porasil Preparative Columns, please refer to [page 299](#).

## μPorasil/Porasil Columns

μPorasil and Porasil particles were one of the first commercially available, fully porous packing materials used for LC separations. In contrast to the reversed-phase separation ability of μBondapak C<sub>18</sub>, the non-bonded, silica-based material in μPorasil Columns was produced to provide normal-phase separations for a wide array of sample types.

### Column Characteristics

	HPLC: 10, 15-20 μm
	Silica, 125 Å
Carbon Load*	N/A
Endcapped	No
USP Class No.	L3

\*Expected or approximate value.

### Ordering Information

#### μPorasil/Porasil

μPorasil, 125 Å	ANALYTICAL COLUMNS	
	Particle Size: 10 μm	
	Dimension	P/N (1/pk)
	3.9 × 300 mm	<a href="#">WAT027477</a>
	PREPARATIVE COLUMNS	
	Particle Size: 10 μm	
	Dimension	P/N (1/pk)
	3.9 × 150 mm	<a href="#">WAT086692</a>
	3.9 × 300 mm	<a href="#">WAT027477</a>
	7.8 × 300 mm	<a href="#">WAT084175</a>
	19 × 150 mm	<a href="#">WAT091648</a>
	19 × 300 mm	<a href="#">WAT025829</a>
Porasil, 125 Å	PREPARATIVE COLUMNS	
	Particle Size: 15-20 μm	
	Dimension	P/N (1/pk)
	3.9 × 300 mm	<a href="#">WAT025874</a>
	19 × 300 mm	<a href="#">WAT025835</a>

## Shodex RSpak Polymer Reversed-Phase Columns

Shodex RSpak Columns are packed with porous polymeric particles that remain stable in a pH range of 2-12. Similar to conventional polymer-based materials, the DS-613 sorbent works well with samples that are more hydrophobic than hydrophilic, and which, consequently, require relatively high concentrations of organic modifiers. DE-613 columns, with a polymethacrylate packing, are more hydrophilic than hydrophobic, and work well with mobile phases containing relatively high concentrations of water. The least hydrophobic sorbent is used for the DE-613 columns.

For weakly cationic species, the DC-613 column is a cation exchanger with unique selectivity (mixed-mode, ion-exchange, and reversed-phase partition chromatography).

### Ordering Information

#### Shodex RSpak D Series Columns

Description	Base Polymer	Functional Group	Dimension	P/N (1/pk)
DS-613	Polystyrene	None	6 × 150 mm	<a href="#">WAT034220</a>
DE-613	Polymethacrylate	None	6 × 150 mm	<a href="#">WAT034221</a>
DC-613	Polystyrene	Sulfonated	6 × 150 mm	<a href="#">WAT034223</a>
DS-G Pre-column	—	—	4.6 × 10 mm	<a href="#">WAT034224</a>
DE-G Pre-column	—	—	4.6 × 10 mm	<a href="#">WAT034225</a>
DC-G Pre-column	—	—	4.6 × 10 mm	<a href="#">WAT034227</a>

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Paperback, 54 pages, ISBN: 978-1-879732-05-6

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### Hydrolysis and Analysis of Amino Acids from Purified Peptides/Proteins, Foods, and Feeds

Sample hydrolysis is an important first step in the workflow for analysis of bound amino acids, such as peptides and proteins. Hydrolysis allows for the analysis of the released amino acids, which can be separated using either ion-exchange or reversed-phase chromatographic methods. Given the challenges of the sample preparation workflow, this document was compiled to provide useful guidelines for sample hydrolysis.

Paperback, 69 pages, ISBN 978-1-879732-13-1

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Part No. [715004398](#)



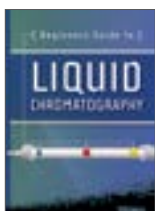
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Paperback, 52 pages, ISBN: 978-1-879732-02-5

Beginner's Guide to Liquid Chromatography

Part No. [715001531](#)



### **Beginner's Guide to SPE (Solid-Phase Extraction)**

Through the extensive use of diagrams and clearly explained text, readers will understand how the power and usefulness of solid-phase extraction can help solve routine or complex sample preparation challenges. The book covers many topics including SPE device formats, sorbent considerations, mobile phase selection, and troubleshooting. The Beginner's Guide to SPE is a must read for anyone starting out in analytical chromatography or seasoned chemists looking to add solid-phase extraction to their skill set.

Paperback, 212 pages, ISBN: 978-1-467539-20-3

Beginner's Guide to SPE (Solid-Phase Extraction)

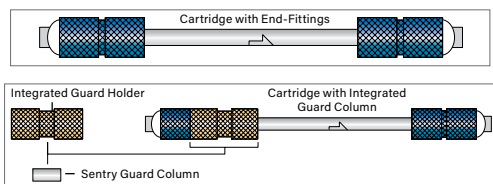
Part No. [715003405](#)

# Cartridge and Guard Columns, Fittings, and Accessories

## CARTRIDGE COLUMNS

### Ordering Information

#### Cartridge Columns



Applicable Column Dimension	Cartridge End Fitting P/N (1/pk)
2.1 × 50 mm, 2.1 × 100 mm, 2.1 × 150 mm, 2.1 × 250 mm	<a href="#">700000117</a>
3.0 × 50 mm, 3.0 × 100 mm, 3.0 × 150 mm, 3.0 × 250 mm	<a href="#">WAT037525</a>
3.9 × 50 mm, 3.9 × 100 mm, 3.9 × 150 mm, 3.9 × 250 mm	<a href="#">WAT037525</a>
4.6 × 50 mm, 4.6 × 100 mm, 4.6 × 150 mm, 4.6 × 250 mm	<a href="#">WAT037525</a>

#### Cartridge Columns

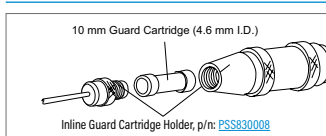
Description	Dimension	Particle Size	P/N (1/pk)
High-Performance Carbohydrate Cartridge Column (requires end fittings)	4.6 × 250 mm	4 μm	<a href="#">WAT044355</a>
μBondapak/Bondapak Cartridge Columns	4.6 × 250 mm	10 μm	<a href="#">WAT052860</a>

## SPHERISORB CARTRIDGE AND GUARD COLUMNS

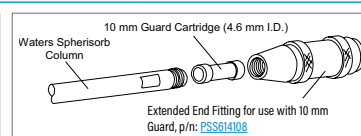
### Ordering Information



#### In-line Guard Cartridge Holder



#### Extended End Fitting for Use with 10 mm Guard Cartridges



Description	Qty.	P/N
Removable Column End Fitting	2/pk	<a href="#">PSS614100</a>
Frit Assembly (2 μm)	5/pk	<a href="#">PSS614103</a>
Frit Assembly (0.5 μm)	5/pk	<a href="#">PSS614104</a>
Column Coupler	2/pk	<a href="#">PSS614102</a>
Extended End Fitting for use with 10 mm Integral Guard	1/pk	<a href="#">PSS614108</a>
Nylon Column Plugs for storage of Complete Column	1/pk	<a href="#">WAT015674</a>
Nylon Column Caps for storage of Replacement Cartridge Column	10/pk	<a href="#">PSS614113</a>
In-line 10 mm Guard Cartridge Holder Kit for use with above items	—	<a href="#">PSS830008</a>

## Waters Spherisorb Guard Columns

Waters Spherisorb Guard columns provide cost-effective column protection for all Waters Spherisorb Analytical Columns.

### Waters Spherisorb Guard Cartridges\*

Dimension	Type	Particle Size	Qty.	ODS1	ODS2	C <sub>8</sub>	C <sub>6</sub>	C <sub>1</sub>	NH <sub>2</sub>
10 × 4.6 mm	Guard	5 μm	3/pk	<a href="#">PSS830073</a>	<a href="#">PSS830053</a>	<a href="#">PSS830074</a>	<a href="#">PSS830075</a>	<a href="#">PSS830076</a>	<a href="#">PSS830079</a>
30 × 4.6 mm	Guard	5 μm	3/pk	—	<a href="#">PSS839458</a>	—	—	—	<a href="#">PSS839478</a>

Dimension	Type	Particle Size	Qty.	CN Normal Phase	W Silica	SAX	SCX
10 × 4.6 mm	Guard	5 μm	3/pk	<a href="#">PSS830077</a>	<a href="#">PSS830051</a>	<a href="#">PSS830055</a>	<a href="#">PSS830057</a>
30 × 4.6 mm	Guard	5 μm	3/pk	<a href="#">PSS839476</a>	<a href="#">PSS839451</a>	<a href="#">PSS839465</a>	<a href="#">PSS839471</a>

\*Requires In-line Guard Cartridge Holder, p/n: [PSS830008](#).

## VANGUARD PRE-COLUMNS AND CARTRIDGES

Using a guard column extends the life of analytical columns without compromising chromatographic performance. Waters offers VanGuard™ Column Protection products in multiple particle sizes and stationary phases, making them ideally suited for the physical and chemical protection of all analytical columns.

Vanguard Columns offer:

- Minimal chromatographic effects and optimized performance
- Superior protection for UPLC, UHPLC, and HPLC columns with particle sizes between 5–16 µm
- Compatible operating pressures up to 18,000 psi (1240 bar)

### Selection Guide

VanGuard Column Protection Cartridge/Pre-column selection based on analytical column I.D.			
Column I.D.	Particle Size	Format	Dimension
2.1 mm	<2 µm	Pre-column	2.1 × 5 mm
2.1 mm	>2 µm	Cartridge Column	2.1 × 5 mm
3.0 mm	>2 µm	Cartridge Column	2.1 × 5 mm
3.9 mm	>2 µm	Cartridge Column	3.9 × 5 mm
4.6 mm	>2 µm	Cartridge Column	3.9 × 5 mm

### Ordering Information

#### Recommended VanGuard Cartridge

Brand	Particle Size	Analytical Columns	
		2.1 and 3.0 mm I.D.	3.9 and 4.6 mm I.D.
Atlantis	3, 5 µm	2.1 × 5 mm	3.9 × 5 mm
CORTECS	2.7 µm	2.1 × 5 mm	3.9 × 5 mm
SunFire	2.5, 3.5, 5 µm	2.1 × 5 mm	3.9 × 5 mm
Symmetry	3.5, 5 µm	2.1 × 5 mm	3.9 × 5 mm
XBridge	2.5, 3.5, 5 µm	2.1 × 5 mm	3.9 × 5 mm
XSelect CSH	2.5, 3.5, 5 µm	2.1 × 5 mm	3.9 × 5 mm
XSelect HSS	2.5, 3.5, 5 µm	2.1 × 5 mm	3.9 × 5 mm
XTerra	2.5, 3.5, 5 µm	2.1 × 5 mm	3.9 × 5 mm

#### Universal VanGuard Cartridge Holder

Description	P/N (1/pk)
Universal VanGuard Cartridge Holder	<a href="#">186007949</a>

#### SunFire VanGuard Cartridges

	Particle Size: 2.5 µm		Particle Size: 3.5 µm		Particle Size: 5 µm	
	Dimension	P/N (3/pk)	Dimension	P/N (3/pk)	Dimension	P/N (3/pk)
C <sub>18</sub>	2.1 × 5 mm	<a href="#">186007691</a>	2.1 × 5 mm	<a href="#">186007694</a>	2.1 × 5 mm	<a href="#">186007697</a>
	3.9 × 5 mm	<a href="#">186007693</a>	3.9 × 5 mm	<a href="#">186007696</a>	3.9 × 5 mm	<a href="#">186007699</a>
C <sub>8</sub>	2.1 × 5 mm	<a href="#">186007700</a>	2.1 × 5 mm	<a href="#">186007703</a>	2.1 × 5 mm	<a href="#">186007706</a>
	3.9 × 5 mm	<a href="#">186007702</a>	3.9 × 5 mm	<a href="#">186007705</a>	3.9 × 5 mm	<a href="#">186007708</a>

#### VanGuard Pre-columns (Guard Columns)


Chemistry	Particle Size	Dimension	P/N (3/pk)
BEH C <sub>18</sub>	1.7 µm	2.1 × 5 mm	<a href="#">186003975</a>
BEH Shield RP18	1.7 µm	2.1 × 5 mm	<a href="#">186003977</a>
BEH C <sub>8</sub>	1.7 µm	2.1 × 5 mm	<a href="#">186003978</a>
BEH Phenyl	1.7 µm	2.1 × 5 mm	<a href="#">186003979</a>
BEH HILIC	1.7 µm	2.1 × 5 mm	<a href="#">186003980</a>
BEH Amide	1.7 µm	2.1 × 5 mm	<a href="#">186004799</a>
CORTECS C <sub>18</sub> +	1.6 µm	2.1 × 5 mm	<a href="#">186007125</a>
CORTECS C <sub>18</sub>	1.6 µm	2.1 × 5 mm	<a href="#">186007123</a>
CORTECS HILIC	1.6 µm	2.1 × 5 mm	<a href="#">186007124</a>
CORTECS Shield RP18	1.6 µm	2.1 × 5 mm	<a href="#">186008713</a>
CORTECS C <sub>8</sub>	1.6 µm	2.1 × 5 mm	<a href="#">186008423</a>
CORTECS Phenyl	1.6 µm	2.1 × 5 mm	<a href="#">186008420</a>
CORTECS T3	1.6 µm	2.1 × 5 mm	<a href="#">186008508</a>
CSH C <sub>18</sub>	1.7 µm	2.1 × 5 mm	<a href="#">186005303</a>
CSH Fluoro-Phenyl	1.7 µm	2.1 × 5 mm	<a href="#">186005358</a>
CSH Phenyl-Hexyl	1.7 µm	2.1 × 5 mm	<a href="#">186005413</a>
HSS C <sub>18</sub>	1.8 µm	2.1 × 5 mm	<a href="#">186003981</a>
HSS C <sub>18</sub> SB	1.8 µm	2.1 × 5 mm	<a href="#">186004136</a>
HSST3	1.8 µm	2.1 × 5 mm	<a href="#">186003976</a>
HSS PFP	1.8 µm	2.1 × 5 mm	<a href="#">186005974</a>
HSS Cyano	1.8 µm	2.1 × 5 mm	<a href="#">186005995</a>

#### Atlantis VanGuard Cartridges

T3	Particle Size: 3.5 µm		Particle Size: 5 µm	
	Dimension	P/N (3/pk)	Dimension	P/N (3/pk)
	2.1 × 5 mm	<a href="#">186007674</a>	2.1 × 5 mm	<a href="#">186007678</a>
3.9 × 5 mm	<a href="#">186007676</a>	3.9 × 5 mm	<a href="#">186007680</a>	
dC <sub>18</sub>	2.1 × 5 mm	<a href="#">186007658</a>	2.1 × 5 mm	<a href="#">186007662</a>
	3.9 × 5 mm	<a href="#">186007660</a>	3.9 × 5 mm	<a href="#">186007664</a>
HILIC Silica	2.1 × 5 mm	<a href="#">186007666</a>	2.1 × 5 mm	<a href="#">186007670</a>
	3.9 × 5 mm	<a href="#">186007668</a>	3.9 × 5 mm	<a href="#">186007672</a>

## Symmetry VanGuard Cartridges

	Particle Size: 3.5 $\mu$ m		Particle Size: 5 $\mu$ m	
	Dimension	P/N (3/pk)	Dimension	P/N (3/pk)
Symmetry C <sub>18</sub>	2.1 $\times$ 5 mm	<a href="#">186007725</a>	2.1 $\times$ 5 mm	<a href="#">186007729</a>
	3.9 $\times$ 5 mm	<a href="#">186007727</a>	3.9 $\times$ 5 mm	<a href="#">186007731</a>
Symmetry C <sub>8</sub>	2.1 $\times$ 5 mm	<a href="#">186007733</a>	2.1 $\times$ 5 mm	<a href="#">186007737</a>
	3.9 $\times$ 5 mm	<a href="#">186007735</a>	3.9 $\times$ 5 mm	<a href="#">186007739</a>
SymmetryShield RP18	2.1 $\times$ 5 mm	<a href="#">186007749</a>	2.1 $\times$ 5 mm	<a href="#">186007753</a>
	3.9 $\times$ 5 mm	<a href="#">186007751</a>	3.9 $\times$ 5 mm	<a href="#">186007755</a>
SymmetryShield RP8	2.1 $\times$ 5 mm	<a href="#">186007741</a>	2.1 $\times$ 5 mm	<a href="#">186007745</a>
	3.9 $\times$ 5 mm	<a href="#">186007743</a>	3.9 $\times$ 5 mm	<a href="#">186007747</a>
Symmetry300 C <sub>18</sub>	2.1 $\times$ 5 mm	<a href="#">186007709</a>	2.1 $\times$ 5 mm	<a href="#">186007713</a>
	3.9 $\times$ 5 mm	<a href="#">186007711</a>	3.9 $\times$ 5 mm	<a href="#">186007715</a>
Symmetry300 C <sub>4</sub>	2.1 $\times$ 5 mm	<a href="#">186007717</a>	2.1 $\times$ 5 mm	<a href="#">186007721</a>
	3.9 $\times$ 5 mm	<a href="#">186007719</a>	3.9 $\times$ 5 mm	<a href="#">186007723</a>

 For Symmetry Analytical Columns, please refer to [page 216](#).

## XBridge VanGuard Cartridges

	Particle Size: 2.5 $\mu$ m		Particle Size: 3.5 $\mu$ m		Particle Size: 5 $\mu$ m	
	Dimension	P/N (3/pk)	Dimension	P/N (3/pk)	Dimension	P/N (3/pk)
BEH C <sub>18</sub>	2.1 $\times$ 5 mm	<a href="#">186007772</a>	2.1 $\times$ 5 mm	<a href="#">186007766</a>	2.1 $\times$ 5 mm	<a href="#">186007769</a>
	3.9 $\times$ 5 mm	<a href="#">186007774</a>	3.9 $\times$ 5 mm	<a href="#">186007768</a>	3.9 $\times$ 5 mm	<a href="#">186007771</a>
BEH C <sub>8</sub>	2.1 $\times$ 5 mm	<a href="#">186007781</a>	2.1 $\times$ 5 mm	<a href="#">186007775</a>	2.1 $\times$ 5 mm	<a href="#">186007778</a>
	3.9 $\times$ 5 mm	<a href="#">186007783</a>	3.9 $\times$ 5 mm	<a href="#">186007777</a>	3.9 $\times$ 5 mm	<a href="#">186007780</a>
BEH Shield RP18	2.1 $\times$ 5 mm	<a href="#">186007808</a>	2.1 $\times$ 5 mm	<a href="#">186007802</a>	2.1 $\times$ 5 mm	<a href="#">186007805</a>
	3.9 $\times$ 5 mm	<a href="#">186007810</a>	3.9 $\times$ 5 mm	<a href="#">186007804</a>	3.9 $\times$ 5 mm	<a href="#">186007807</a>
Phenyl	2.1 $\times$ 5 mm	<a href="#">186007799</a>	2.1 $\times$ 5 mm	<a href="#">186007793</a>	2.1 $\times$ 5 mm	<a href="#">186007796</a>
	3.9 $\times$ 5 mm	<a href="#">186007801</a>	3.9 $\times$ 5 mm	<a href="#">186007795</a>	3.9 $\times$ 5 mm	<a href="#">186007798</a>
HILIC	2.1 $\times$ 5 mm	<a href="#">186007790</a>	2.1 $\times$ 5 mm	<a href="#">186007784</a>	2.1 $\times$ 5 mm	<a href="#">186007787</a>
	3.9 $\times$ 5 mm	<a href="#">186007792</a>	3.9 $\times$ 5 mm	<a href="#">186007786</a>	3.9 $\times$ 5 mm	<a href="#">186007789</a>
Amide	2.1 $\times$ 5 mm	<a href="#">186007763</a>	2.1 $\times$ 5 mm	<a href="#">186007757</a>	2.1 $\times$ 5 mm	<a href="#">186007760</a>
	3.9 $\times$ 5 mm	<a href="#">186007765</a>	3.9 $\times$ 5 mm	<a href="#">186007759</a>	3.9 $\times$ 5 mm	<a href="#">186007762</a>

 For XBridge Analytical Columns, please refer to [page 181](#).



## XSelect VanGuard Cartridges

	Particle Size: 2.5 $\mu$ m		Particle Size: 3.5 $\mu$ m		Particle Size: 5 $\mu$ m	
	Dimension	P/N (3/pk)	Dimension	P/N (3/pk)	Dimension	P/N (3/pk)
CSH C <sub>18</sub>	2.1 $\times$ 5 mm <i>XP</i>	<a href="#">186007817</a>	2.1 $\times$ 5 mm	<a href="#">186007811</a>	2.1 $\times$ 5 mm	<a href="#">186007814</a>
	3.9 $\times$ 5 mm <i>XP</i>	<a href="#">186007819</a>	3.9 $\times$ 5 mm	<a href="#">186007813</a>	3.9 $\times$ 5 mm	<a href="#">186007816</a>
CSH Fluoro-Phenyl	2.1 $\times$ 5 mm <i>XP</i>	<a href="#">186007827</a>	2.1 $\times$ 5 mm	<a href="#">186007820</a>	2.1 $\times$ 5 mm	<a href="#">186007824</a>
	3.9 $\times$ 5 mm <i>XP</i>	<a href="#">186007829</a>	3.9 $\times$ 5 mm	<a href="#">186007822</a>	3.9 $\times$ 5 mm	<a href="#">186007826</a>
CSH Phenyl-Hexyl	2.1 $\times$ 5 mm <i>XP</i>	<a href="#">186007839</a>	2.1 $\times$ 5 mm	<a href="#">186007830</a>	2.1 $\times$ 5 mm	<a href="#">186007836</a>
	3.9 $\times$ 5 mm <i>XP</i>	<a href="#">186007841</a>	3.9 $\times$ 5 mm	<a href="#">186007832</a>	3.9 $\times$ 5 mm	<a href="#">186007838</a>
HSS C <sub>18</sub>	2.1 $\times$ 5 mm	<a href="#">186007857</a>	2.1 $\times$ 5 mm	<a href="#">186007851</a>	2.1 $\times$ 5 mm	<a href="#">186007854</a>
	3.9 $\times$ 5 mm	<a href="#">186007859</a>	3.9 $\times$ 5 mm	<a href="#">186007853</a>	3.9 $\times$ 5 mm	<a href="#">186007856</a>
HSS C <sub>18</sub> SB	2.1 $\times$ 5 mm	<a href="#">186007848</a>	2.1 $\times$ 5 mm	<a href="#">186007842</a>	2.1 $\times$ 5 mm	<a href="#">186007845</a>
	3.9 $\times$ 5 mm	<a href="#">186007850</a>	3.9 $\times$ 5 mm	<a href="#">186007844</a>	3.9 $\times$ 5 mm	<a href="#">186007847</a>
HSS T3	2.1 $\times$ 5 mm	<a href="#">186007884</a>	2.1 $\times$ 5 mm	<a href="#">186007878</a>	2.1 $\times$ 5 mm	<a href="#">186007881</a>
	3.9 $\times$ 5 mm	<a href="#">186007886</a>	3.9 $\times$ 5 mm	<a href="#">186007880</a>	3.9 $\times$ 5 mm	<a href="#">186007883</a>
HSS PFP	2.1 $\times$ 5 mm	<a href="#">186007875</a>	2.1 $\times$ 5 mm	<a href="#">186007869</a>	2.1 $\times$ 5 mm	<a href="#">186007872</a>
	3.9 $\times$ 5 mm	<a href="#">186007877</a>	3.9 $\times$ 5 mm	<a href="#">186007871</a>	3.9 $\times$ 5 mm	<a href="#">186007874</a>
HSS CN	2.1 $\times$ 5 mm	<a href="#">186007866</a>	2.1 $\times$ 5 mm	<a href="#">186007860</a>	2.1 $\times$ 5 mm	<a href="#">186007863</a>
	3.9 $\times$ 5 mm	<a href="#">186007868</a>	3.9 $\times$ 5 mm	<a href="#">186007862</a>	3.9 $\times$ 5 mm	<a href="#">186007865</a>

 For XSelect Analytical Columns, please refer to [page 196](#).

## XTerra VanGuard Cartridges

	Particle Size: 2.5 $\mu$ m		Particle Size: 3.5 $\mu$ m		Particle Size: 5 $\mu$ m	
	Dimension	P/N (3/pk)	Dimension	P/N (3/pk)	Dimension	P/N (3/pk)
MS C <sub>18</sub>	2.1 $\times$ 5 mm	<a href="#">186007887</a>	2.1 $\times$ 5 mm	<a href="#">186007892</a>	2.1 $\times$ 5 mm	<a href="#">186007896</a>
	3.9 $\times$ 5 mm	<a href="#">186007889</a>	3.9 $\times$ 5 mm	<a href="#">186007894</a>	3.9 $\times$ 5 mm	<a href="#">186007899</a>
MS C <sub>8</sub>	2.1 $\times$ 5 mm	<a href="#">186007901</a>	2.1 $\times$ 5 mm	<a href="#">186007905</a>	2.1 $\times$ 5 mm	<a href="#">186007909</a>
	3.9 $\times$ 5 mm	<a href="#">186007903</a>	3.9 $\times$ 5 mm	<a href="#">186007907</a>	3.9 $\times$ 5 mm	<a href="#">186007911</a>
Shield RP18			2.1 $\times$ 5 mm	<a href="#">186007929</a>	2.1 $\times$ 5 mm	<a href="#">186007933</a>
			3.9 $\times$ 5 mm	<a href="#">186007931</a>	3.9 $\times$ 5 mm	<a href="#">186007935</a>
Shield RP8			2.1 $\times$ 5 mm	<a href="#">186007941</a>	3.9 $\times$ 5 mm	<a href="#">186007947</a>
			3.9 $\times$ 5 mm	<a href="#">186007943</a>		
Phenyl			2.1 $\times$ 5 mm	<a href="#">186007917</a>	2.1 $\times$ 5 mm	<a href="#">186007921</a>
			3.9 $\times$ 5 mm	<a href="#">186007919</a>	3.9 $\times$ 5 mm	<a href="#">186007923</a>

 For XTerra Analytical Columns, please refer to [page 221](#).

## SENTRY GUARD CARTRIDGES

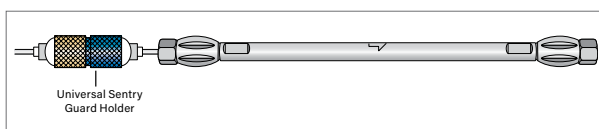
Waters Sentry Guard Cartridges are widely used as a cost-effective way to prolong HPLC column life by reducing particulate matter and chemical contaminants. Two holder designs are offered, one for use as an integrated part of the Waters Cartridge Column with reusable end fittings, the other for use with any HPLC column. Both designs allow the replacement of Sentry Guard Cartridges without tools.



### Ordering Information

#### Waters Cartridge and Guard Column Guide

##### Guard Columns Universal Sentry Guard Holder Kits



Dimension	P/N (1/pk)
2.1 × 10 mm	<a href="#">WAT097958</a>
2.1 × 20 mm	<a href="#">186000262</a>
3.0 × 20 mm	<a href="#">WAT046910</a>
3.9 × 20 mm	<a href="#">WAT046910</a>
4.6 × 20 mm	<a href="#">WAT046910</a>

#### Sentry Guard Holders and Replacement Parts\*

Description	P/N (1/pk)
Integrated Guard Holder (Use with Waters Cartridge Columns)	<a href="#">WAT046905</a>
<b>Replacement Parts</b>	
O-ring Kit for Sentry 2.1 mm Guard Holder, 2/pk	<a href="#">WAT097954</a>
O-Ring Kit for Sentry 3.0, 3.9, 4.6 mm Guard Holder, 2/pk	<a href="#">WAT023401</a>
Rigid Connector for Sentry 2.1 mm Guard Holder	<a href="#">WAT022681</a>

\*50 mm and 75 mm long Cartridge Columns must use the Universal Guard Holder.

#### µBondapak/Bondapak Sentry Guard Cartridges

Particle Size: 10 µm		
	Dimension	P/N (2/pk)
<b>C<sub>18</sub></b>	3.9 × 20 mm	<a href="#">WAT044480<sup>2</sup></a>
<b>CN</b>	3.9 × 20 mm	<a href="#">WAT046855<sup>2</sup></a>
<b>NH<sub>2</sub></b>	3.9 × 20 mm	<a href="#">WAT046865<sup>2</sup></a>
<b>Phenyl</b>	3.9 × 20 mm	<a href="#">WAT046850<sup>2</sup></a>

<sup>2</sup>Requires 3.0 × 20 mm/4.6 × 20 mm Universal Sentry Guard Holder, p/n: [WAT046910](#).

#### µPorasil/Porasil Sentry Guard Cartridges

Particle Size: 10 µm		
	Dimension	P/N (2/pk)
<b>µPorasil</b>	3.9 × 20 mm	<a href="#">WAT046860<sup>1</sup></a>

<sup>1</sup>Requires 2.1 × 10 mm Universal Sentry Guard Holder, p/n: [WAT097958](#).

#### Delta-Pak Sentry Guard Cartridges

Particle Size: 5 µm		
	Dimension	P/N (2/pk)
<b>C<sub>4</sub>, 100 Å</b>	3.9 × 20 mm	<a href="#">WAT046875<sup>2</sup></a>
<b>C<sub>4</sub>, 300 Å</b>	3.9 × 20 mm	<a href="#">WAT046885<sup>2</sup></a>
<b>C<sub>18</sub>, 100 Å</b>	3.9 × 20 mm	<a href="#">WAT046880<sup>2</sup></a>
<b>C<sub>18</sub>, 300 Å</b>	3.9 × 20 mm	<a href="#">WAT046890<sup>2</sup></a>

<sup>2</sup>Requires 3.0 × 20 mm/4.6 × 20 mm Universal Sentry Guard Holder, p/n: [WAT046910](#).

#### Nova-Pak Sentry Guard Cartridges

Particle Size: 4 µm		
	Dimension	P/N (2/pk)
<b>C<sub>8</sub></b>	3.9 × 20 mm	<a href="#">WAT046830<sup>2</sup></a>
<b>C<sub>18</sub></b>	3.9 × 20 mm	<a href="#">WAT044380<sup>2</sup></a>
<b>CN-HP</b>	3.9 × 20 mm	<a href="#">WAT046840<sup>2</sup></a>
<b>Phenyl</b>	3.9 × 20 mm	<a href="#">WAT046835<sup>2</sup></a>
<b>Silica</b>	3.9 × 20 mm	<a href="#">WAT046845<sup>2</sup></a>

<sup>2</sup>Requires 3.0 × 20 mm/4.6 × 20 mm Universal Sentry Guard Holder, p/n: [WAT046910](#).

#### Resolve Sentry Guard Cartridges

Particle Size: 5 µm		
	Dimension	P/N (2/pk)
<b>C<sub>18</sub></b>	3.9 × 20 mm	<a href="#">WAT046915<sup>1</sup></a>

<sup>1</sup>Requires 3.9 × 20 mm Universal Sentry Guard Holder, p/n: [WAT046910](#).

## Atlantis Sentry Guard Cartridges

	Particle Size: 3 µm		Particle Size: 5 µm	
	Dimension	P/N (2/pk)	Dimension	P/N (2/pk)
<b>T3</b>	2.1 × 10 mm	<a href="#">186003756</a> <sup>1</sup>	4.6 × 20 mm	<a href="#">186003761</a> <sup>2</sup>
	4.6 × 20 mm	<a href="#">186003758</a> <sup>2</sup>		
<b>dC<sub>18</sub></b>	2.1 × 10 mm	<a href="#">186001377</a> <sup>1</sup>	4.6 × 20 mm	<a href="#">186001323</a> <sup>2</sup>
	4.6 × 20 mm	<a href="#">186001321</a> <sup>2</sup>		
<b>HILIC Silica</b>	2.1 × 10 mm	<a href="#">186002005</a> <sup>1</sup>		

<sup>1</sup> Requires 2.1 × 10 mm Universal Sentry Guard Holder, p/n: [WAT097958](#).

<sup>2</sup> Requires 3.0 × 20 mm/4.6 × 20 mm Universal Sentry Guard Holder, p/n: [WAT046910](#).

## SunFire Sentry Guard Cartridges

	Particle Size: 3.5 µm		Particle Size: 5 µm	
	Dimension	P/N (2/pk)	Dimension	P/N (2/pk)
<b>C<sub>8</sub></b>	2.1 × 10 mm	<a href="#">186002708</a> <sup>1</sup>	2.1 × 10 mm	<a href="#">186002713</a> <sup>1</sup>
	3.0 × 20 mm	<a href="#">186002718</a> <sup>2</sup>	3.0 × 20 mm	<a href="#">186002722</a> <sup>2</sup>
	4.6 × 20 mm	<a href="#">186002727</a> <sup>2</sup>	4.6 × 20 mm	<a href="#">186002732</a> <sup>2</sup>
<b>C<sub>18</sub></b>	2.1 × 10 mm	<a href="#">186002530</a> <sup>1</sup>	2.1 × 10 mm	<a href="#">186002536</a> <sup>1</sup>
	3.0 × 20 mm	<a href="#">186002681</a> <sup>2</sup>	3.0 × 20 mm	<a href="#">186002682</a> <sup>2</sup>
	4.6 × 20 mm	<a href="#">186002682</a> <sup>2</sup>	4.6 × 20 mm	<a href="#">186002684</a> <sup>2</sup>

<sup>1</sup> Requires 2.1 × 10 mm Universal Sentry Guard Holder, p/n: [WAT097958](#).

<sup>2</sup> Requires 3.0 × 20 mm/4.6 × 20 mm Universal Sentry Guard Holder, p/n: [WAT046910](#).

## Symmetry, SymmetryShield, and Symmetry300 Sentry Guard Cartridges

	Particle Size: 3.5 µm		Particle Size: 5 µm	
	Dimension	P/N (2/pk)	Dimension	P/N (2/pk)
<b>Symmetry C<sub>8</sub></b>	2.1 × 10 mm	<a href="#">WAT106128</a> <sup>1</sup>	3.9 × 20 mm	<a href="#">WAT054250</a> <sup>2</sup>
<b>Symmetry C<sub>18</sub></b>	2.1 × 10 mm	<a href="#">WAT106127</a> <sup>1</sup>	3.9 × 20 mm	<a href="#">WAT054225</a> <sup>2</sup>
<b>SymmetryShield RP8</b>	2.1 × 10 mm	<a href="#">WAT106129</a> <sup>1</sup>	3.9 × 20 mm	<a href="#">WAT200675</a> <sup>2</sup>
<b>SymmetryShield RP18</b>	2.1 × 10 mm	<a href="#">186000169</a> <sup>1</sup>	3.9 × 20 mm	<a href="#">186000107</a> <sup>2</sup>
	3.9 × 20 mm	<a href="#">186000701</a> <sup>2</sup>		
<b>Symmetry300 C<sub>4</sub></b>	2.1 × 10 mm	<a href="#">186000275</a> <sup>1</sup>	3.9 × 20 mm	<a href="#">186000284</a> <sup>2</sup>
<b>Symmetry300 C<sub>18</sub></b>	2.1 × 10 mm	<a href="#">186000198</a> <sup>1</sup>	3.9 × 20 mm	<a href="#">WAT106166</a> <sup>2</sup>

<sup>1</sup> Requires 2.1 × 10 mm Universal Sentry Guard Holder, p/n: [WAT097958](#).

<sup>2</sup> Requires 3.0 × 20 mm/4.6 × 20 mm Universal Sentry Guard Holder, p/n: [WAT046910](#).

## XBridge Sentry Guard Cartridges

	Particle Size: 3.5 µm		Particle Size: 5 µm	
	Dimension	P/N (2/pk)	Dimension	P/N (2/pk)
<b>BEH C<sub>8</sub></b>	3.0 × 20 mm	<a href="#">186003078</a> <sup>2</sup>	2.1 × 10 mm	<a href="#">186003080</a> <sup>1</sup>
	4.6 × 20 mm	<a href="#">186003079</a> <sup>2</sup>	3.0 × 20 mm	<a href="#">186003081</a> <sup>2</sup>
			4.6 × 20 mm	<a href="#">186003082</a> <sup>2</sup>
<b>BEH C<sub>18</sub></b>	3.0 × 20 mm	<a href="#">186003060</a> <sup>2</sup>	2.1 × 10 mm	<a href="#">186003062</a> <sup>1</sup>
	4.6 × 20 mm	<a href="#">186003061</a> <sup>2</sup>	3.0 × 20 mm	<a href="#">186003063</a> <sup>2</sup>
			4.6 × 20 mm	<a href="#">186003064</a> <sup>2</sup>
<b>BEH Shield RP18</b>	3.0 × 20 mm	<a href="#">186003069</a> <sup>2</sup>	2.1 × 10 mm	<a href="#">186003071</a> <sup>1</sup>
	4.6 × 20 mm	<a href="#">186003070</a> <sup>2</sup>	3.0 × 20 mm	<a href="#">186003072</a> <sup>2</sup>
			4.6 × 20 mm	<a href="#">186003073</a> <sup>2</sup>

<sup>1</sup> Requires 2.1 × 10 mm Universal Sentry Guard Holder, p/n: [WAT097958](#).

<sup>2</sup> Requires 3.0 × 20 mm/4.6 × 20 mm Universal Sentry Guard Holder, p/n: [WAT046910](#).

## XSelect Sentry Guard Cartridges

	Particle Size: 3.5 µm		Particle Size: 5 µm	
	Dimension	P/N (2/pk)	Dimension	P/N (2/pk)
<b>CSH C<sub>18</sub></b>	2.1 × 10 mm	<a href="#">186005252</a> <sup>1</sup>	4.6 × 20 mm	<a href="#">186005285</a> <sup>2</sup>
	3.0 × 20 mm	<a href="#">186005258</a> <sup>2</sup>		
	4.6 × 20 mm	<a href="#">186005264</a> <sup>2</sup>		
<b>HSS T3</b>	2.1 × 10 mm	<a href="#">186006470</a> <sup>1</sup>	4.6 × 20 mm	<a href="#">186004792</a> <sup>2</sup>
	3.0 × 20 mm	<a href="#">186004782</a> <sup>2</sup>		
	4.6 × 20 mm	<a href="#">186004787</a> <sup>2</sup>		

<sup>1</sup> Requires 2.1 × 10 mm Universal Sentry Guard Holder, p/n: [WAT097958](#).

<sup>2</sup> Requires 3.0 × 20 mm/4.6 × 20 mm Universal Sentry Guard Holder, p/n: [WAT046910](#).

## XTerra Sentry Guard Cartridges

	Particle Size: 3.5 µm		Particle Size: 5 µm	
	Dimension	P/N (2/pk)	Dimension	P/N (2/pk)
<b>MS C<sub>18</sub></b>	3.9 × 20 mm	<a href="#">186000644</a>	2.1 × 20 mm	<a href="#">186000653</a> <sup>3</sup>
	4.6 × 10 mm	<a href="#">186001927</a>	3.0 × 20 mm	<a href="#">186000656</a> <sup>2</sup>
			3.9 × 20 mm	<a href="#">186000660</a> <sup>2</sup>
			4.6 × 10 mm	<a href="#">186001920</a> <sup>4</sup>
<b>MS C<sub>8</sub></b>	—	—	3.9 × 20 mm	<a href="#">186000661</a> <sup>2</sup>
<b>RP18</b>	3.9 × 20 mm	<a href="#">186000646</a> <sup>2</sup>	2.1 × 20 mm	<a href="#">186000654</a> <sup>3</sup>
			3.0 × 20 mm	<a href="#">186000658</a>
			3.9 × 20 mm	<a href="#">186000662</a> <sup>2</sup>

<sup>2</sup> Requires 3.0 × 20 mm/4.6 × 20 mm Universal Sentry Guard Holder, p/n: [WAT046910](#).

<sup>3</sup> Requires Cartridge Column Holder, p/n: [186000262](#).

<sup>4</sup> Requires In-line Guard Cartridge Holder, p/n: [PSS830008](#).

## GUARD-PAK HOLDER AND INSERTS

Waters Guard-Pak Holder is a compact, stand-alone housing for our unique disposable Guard-Pak Inserts. Installed In-line with your HPLC system immediately before the analytical column, the Guard-Pak Holder and inserts protect analytical LC columns against the gradual accumulation of particulates and chemical contaminants originating from the sample.



### Ordering Information

#### Guard-Pak Holder

Description	P/N (1/pk)
Guard-Pak Holder	<a href="#">WAT088141</a>
Guard-Pak Holder Connector	<a href="#">WAT080046</a>

#### Guard-Pak Inserts

Description	Particle Size	P/N (10/pk)
Bondapak C <sub>18</sub> , 125 Å	10 µm	<a href="#">WAT088070</a> <sup>1</sup>
Bondapak NH <sub>2</sub> , 125 Å	10 µm	<a href="#">WAT026760</a> <sup>1</sup>
Bondapak Phenyl, 125 Å	10 µm	<a href="#">WAT026745</a> <sup>1</sup>
C <sub>8</sub> , 60 Å	4 µm	<a href="#">WAT035880</a> <sup>1</sup>
Nova-Pak C <sub>18</sub> , 60 Å	4 µm	<a href="#">WAT015220</a> <sup>1</sup>
Resolve C <sub>18</sub> , 90 Å	10 µm	<a href="#">WAT085824</a> <sup>1</sup>

<sup>1</sup>Requires Guard-Pak Holder, p/n: [WAT088141](#).