

# Xtimate® Series HPLC Column

---Next generation beyond mid-range priced Ultisil® series

X features of Xtimate® column

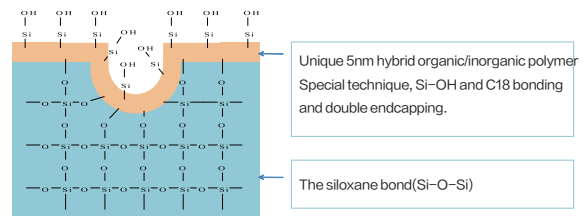
- extra pH range:** wide pH range from 1.0 to 12.5, excellent peak shape for strong bases
- extra column lifetime:** 5 times of similar product such as Gemini
- extra performance:** column efficiency of 5µm columns is as high as 90000/m, 2-3 times of that of Xterra
- extra care from Welch:** enjoy excellent pre-sales and after-sales service from Welch

## Xtimate® Silica Based HPLC Column

Xtimate® HPLC column derives its outstanding performance from a special hybrid particle based technique, which coats a unique 5nm organic/inorganic polymer layer on the silica surface, so that the pH range is extended to 1.0-12.5. Xtimate® column is designed for HPLC method development. Regardless of the types of mobile phase or high temperature, Xtimate® HPLC column always has stable performance and long lifetime.

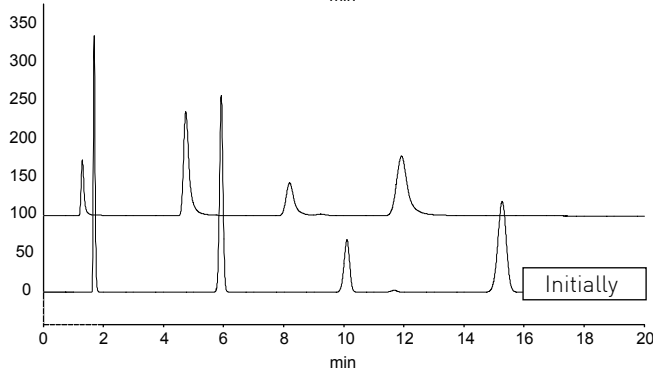
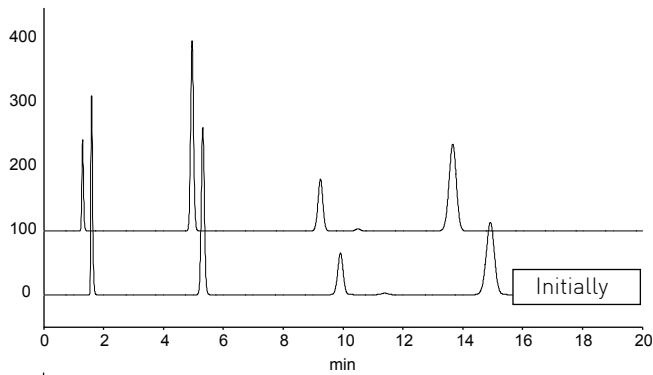


SEM of Hybrid particle



Hybrid Particles Based Xtimate® Technology

### Comparison of Peak Shape After Soaking In Base

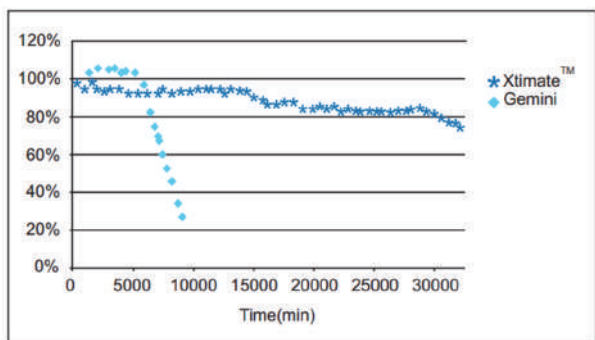


After test at pH 12 condition for 4h, the peak shape of hybrid particles based Xtimate® column shows no difference.

<b>Column:</b>	Xtimate® C18, 5 µm, 150 x 4.6 mm
<b>Mobile Phase:</b>	CH <sub>3</sub> CN/0.01N-NaOHaq.[pH=12]=30/70
<b>Flow Rate:</b>	1.0ml/min
<b>Temperature:</b>	40°C
<b>Soak Time:</b>	4 hours

<b>Column:</b>	Ultisil® C18, 5 µm, 150 x 4.6 mm
<b>Mobile Phase:</b>	CH <sub>3</sub> OH/H <sub>2</sub> O=60/40
<b>Flow Rate:</b>	1.0 mL/min
<b>Temperature:</b>	40°C
<b>Detector:</b>	UV 254nm
<b>Samples:</b>	1.Uracil      2.Methyl benzoate 3.Toluence    4.Naphthalene

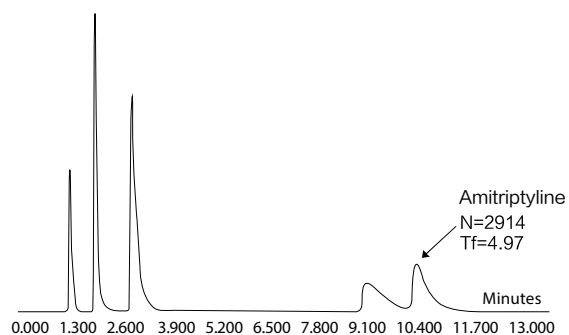
### Lifetime Test Comparison: 5 Times Longer Than Gemini



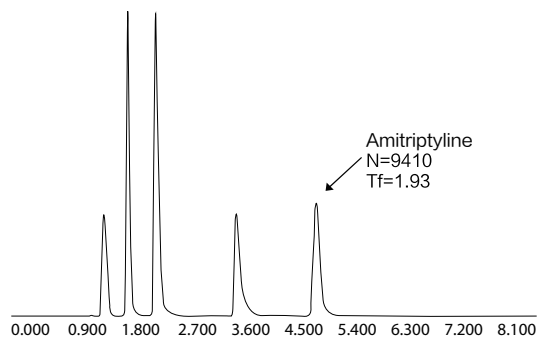
<b>Column:</b>	Xtimate® C18, 5 µm, 150x4.6 mm / Gemini C18, 5 µm, 150x4.6 mm
<b>Mobile Phase:</b>	A: 10mM Ammonium Bicarbonate pH 10.5 B: 90:10 Acetonitrile/buffer
<b>Gradient Program:</b>	0% to 100% B in 10min. 100% B for 7min. 0% B for 3min.
<b>Flow Rate:</b>	1.0 mL/min
<b>Temperature:</b>	50°C
<b>Detector:</b>	UV 254 nm
<b>Samples:</b>	1.Uracil    2.Methyl benzoate 3.Toluence    4.Naphthalene

### Unprecedented Peak Shape

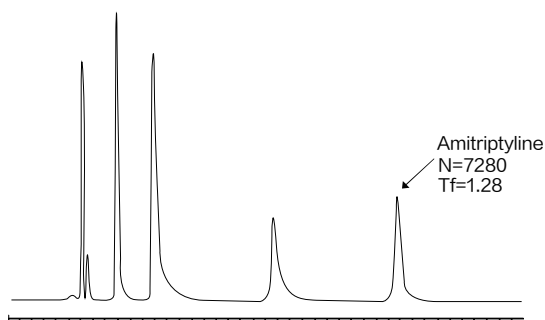
At mid pH, strong bases usually exhibit bad tailing due to secondary interactions between the analytes and the surface silanols. In Welch's unique technique, the hybrid layer totally covers the surface silanols and blocks analytes' access to these surface silanols. Improved bonding and endcapping further reduce silanol activity. As a result, hybrid particle based Xtimate® columns show unprecedented peak shape.



The detection of amitriptyline by poor endcapping product



The detection of Amitriptyline by Symmetry C18



The detection of amitriptyline by Xtimate® C18



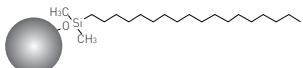
# Xtimate® HPLC Column

Besides C18 and C8 bonded phases, Xtimate also provides C4, CN, Phenyl bonded phases.

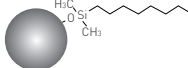
Xtimate® applies a new special Smoothpak™ technique to C18, C8, C4, CN, Phenyl and amino phases, different than the bonding method of other series. As a result, Xtimate® provides a different selectivity, improved stability and reproducibility. In particular, for the Phenyl phase of Phenyl-Hexyl, Xtimate® is totally different from Ultisil® Phenyl. Xtimate® Phenyl phase's longer hexyl group provides extra hydrocarbon interaction and longer retention than conventional phenyl-propyl phase; it also provides better chemical stability.

Welch also adds polar embedded phase, Polar-RP on Xtimate® particles, to further improve peak shape for very polar and strong basic compounds and provides different selectivity than does C18 phase.

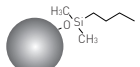
## Xtimate® C18

Structural Formula	
pH Range	1.0-12.5
Particle Size	3 µm, 5 µm, 10 µm
Surface Area(m <sup>2</sup> /g)	320(120 Å)
Carbon Loading(%)	14(120 Å)
USP List	L1
Endcapped	Yes

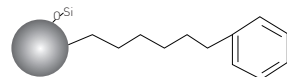
## Xtimate® C8

Structural Formula	
pH Range	1.0-12.5
Particle Size	3 µm, 5 µm, 10 µm
Surface Area(m <sup>2</sup> /g)	320(120 Å)
Carbon Loading(%)	10(120 Å)
USP List	L7
Endcapped	Yes

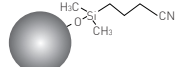
## Xtimate® C4

Structural Formula	
pH Range	1.0-12.5
Particle Size	3 µm, 5 µm
Surface Area(m <sup>2</sup> /g)	320(120 Å)
Carbon Loading(%)	8(120 Å)
USP List	L26
Endcapped	Yes

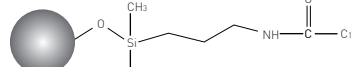
## Xtimate® Phenyl-Hexyl

Structural Formula	
pH Range	1.0-12.5
Particle Size	3 µm, 5 µm
Surface Area(m <sup>2</sup> /g)	320(120 Å)
Carbon Loading(%)	12(120 Å)
USP List	L11
Endcapped	Yes

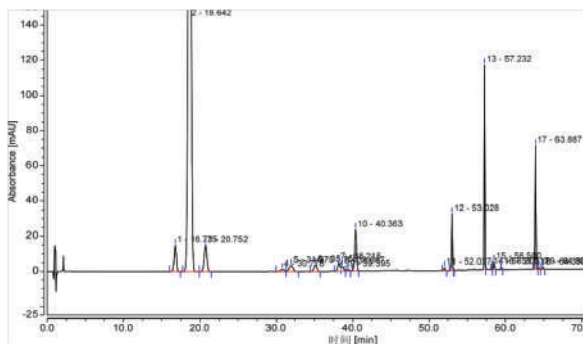
## Xtimate® CN

Structural Formula	
pH Range	1.0-12.5
Particle Size	5 µm
Surface Area(m <sup>2</sup> /g)	320(120 Å)
Carbon Loading(%)	7(120 Å)
USP List	L10
Endcapped	Yes

## Xtimate® Polar-RP

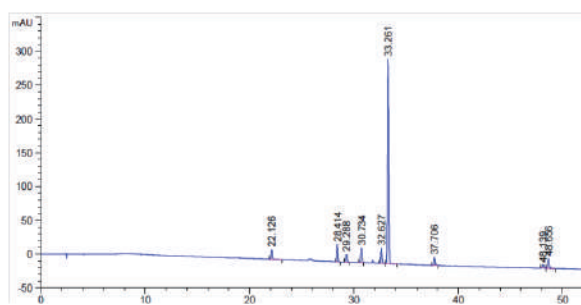
Structural Formula	
pH Range	1.0-12.5
Particle Size	5 µm
Surface Area(m <sup>2</sup> /g)	320(120 Å)
Carbon Loading(%)	16(120 Å)
USP List	L1
Endcapped	Yes

### Rosuvastatin Calcium



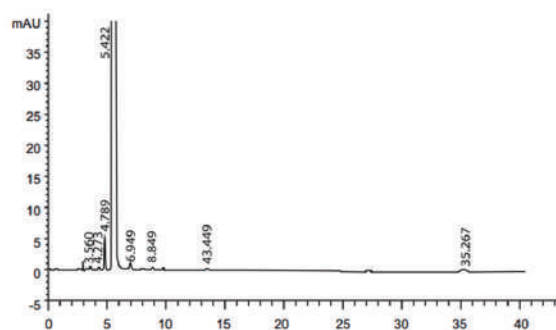
<b>Column:</b>	Xtimate® C18, 3.0 ×150 mm, 3 µm															
<b>Mobile Phase:</b>	A: 1% TFA/acetonitrile/water=1/29/70 B: 1% TFA/acetonitrile/water=1/75/24															
	<table border="1"> <thead> <tr> <th>Time(min)</th> <th>A(%)</th> <th>B(%)</th> </tr> </thead> <tbody> <tr> <td>0-30</td> <td>100</td> <td>0</td> </tr> <tr> <td>30-50</td> <td>100-50</td> <td>0-40</td> </tr> <tr> <td>50-60</td> <td>60-0</td> <td>40-100</td> </tr> <tr> <td>60-70</td> <td>0</td> <td>100</td> </tr> </tbody> </table>	Time(min)	A(%)	B(%)	0-30	100	0	30-50	100-50	0-40	50-60	60-0	40-100	60-70	0	100
Time(min)	A(%)	B(%)														
0-30	100	0														
30-50	100-50	0-40														
50-60	60-0	40-100														
60-70	0	100														
<b>Flow Rate:</b>	0.75 mL/min															
<b>Temperature:</b>	40°C															
<b>Detector:</b>	242 nm															
<b>Injection Volume:</b>	10 µL															

### Cangrelor



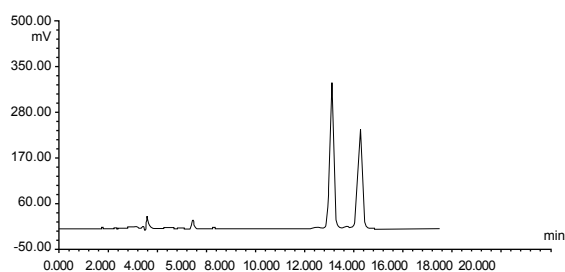
<b>Column:</b>	Xtimate® C18, 4.6 ×250 mm, 5 µm																											
<b>Mobile Phase:</b>	Mobile phase A: 0.05 mol/L K <sub>2</sub> HPO <sub>4</sub> (pH 8.5) Mobile Phase B: acetonitrile																											
	<table border="1"> <thead> <tr> <th>Time(min)</th> <th>A(%)</th> <th>B(%)</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>95</td> <td>5</td> </tr> <tr> <td>3</td> <td>95</td> <td>5</td> </tr> <tr> <td>35</td> <td>67</td> <td>33</td> </tr> <tr> <td>50</td> <td>60</td> <td>40</td> </tr> <tr> <td>60</td> <td>35</td> <td>65</td> </tr> <tr> <td>65</td> <td>35</td> <td>65</td> </tr> <tr> <td>66</td> <td>95</td> <td>5</td> </tr> <tr> <td>75</td> <td>95</td> <td>5</td> </tr> </tbody> </table>	Time(min)	A(%)	B(%)	0	95	5	3	95	5	35	67	33	50	60	40	60	35	65	65	35	65	66	95	5	75	95	5
Time(min)	A(%)	B(%)																										
0	95	5																										
3	95	5																										
35	67	33																										
50	60	40																										
60	35	65																										
65	35	65																										
66	95	5																										
75	95	5																										
<b>Flow Rate:</b>	1.0 mL/min																											
<b>Temperature:</b>	25°C																											
<b>Detector:</b>	242 nm																											
<b>Injection Volume:</b>	5 µL																											

### Valaciclovir Hydrochloride



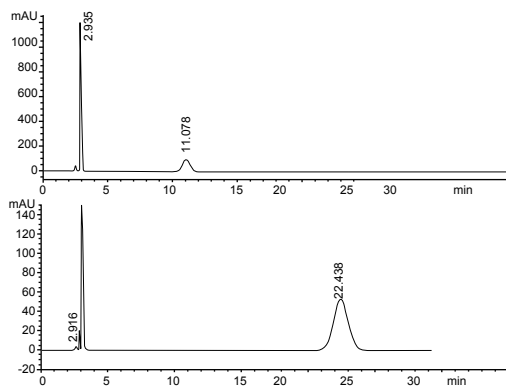
<b>Column:</b>	Xtimate® Phenyl-Hexyl, 250 x 4.6 mm, 5 µm
<b>Mobile Phase:</b>	Methanol/0.01mol/L KH <sub>2</sub> PO <sub>4</sub> (pH3.0)=15/85
<b>Flow Rate:</b>	1.0 mL/min
<b>Temperature:</b>	35°C
<b>Detector:</b>	251 nm
<b>Injection Volume:</b>	20 µL

### Omeprazole



<b>Column:</b>	Xtimate® C8, 250 x 4.6 mm, 5 µm
<b>Mobile Phase:</b>	10 mmol/L Na <sub>2</sub> HPO <sub>4</sub> (pH7.4)/ Acetonitrile=70/30
<b>Flow Rate:</b>	1.0 mL/min
<b>Temperature:</b>	Ambient
<b>Detector:</b>	280 nm
<b>Injection Volume:</b>	20 µL

## Enalapril Maleate



<b>Column:</b>	Xtimate® C8, 250 x 4.6 mm, 5 µm
<b>Mobile Phase:</b>	Phosphate buffer/acetonitrile=75/25
<b>Flow Rate:</b>	1.0mL/min
<b>Temperature:</b>	50°C
<b>Detector:</b>	280 nm
<b>Injection Volume:</b>	20 µL

## Ordering Information

### Xtimate® C18

Particle size	Column ID (mm)	Column Length (mm)										Guard Cartridge	Cartridge holder	
		30	33	50	75	100	125	150	200	250	300			
3 µm	2.1	00101-11009	09101-11009	00101-11010	00101-11011	00101-11012	00101-11013	00101-11014	00101-11015	00101-11016	-	00808-23101	00808-01107	
	3.0	00101-11018	-	00101-11019	00101-11020	00101-11021	00101-11022	00101-11023	00101-11024	00101-11025	-	00808-23101	00808-01107	
	4.0	00101-11027	-	00101-11028	00101-21029	00101-11030	00101-11031	00101-11032	00101-11033	00101-11034	-	00808-03101	00808-01101	
	4.6	00101-11036	11101-11036	00101-11037	00101-21038	00101-11039	00101-11040	00101-11041	00101-11042	00101-11043	-	00808-03101	00808-01101	
5 µm	2.1	00101-21009	09101-21009	00101-21010	00101-21011	00101-21012	00101-21013	00101-21014	00101-21015	00101-21016	-	00808-24101	00808-01107	
	3.0	00101-21018	-	00101-21019	00101-21020	00101-21021	00101-21022	00101-21023	00101-21024	00101-21025	-	00808-24101	00808-01107	
	4.0	00101-21027	-	00101-21028	00101-21029	00101-21030	00101-21031	00101-21032	00101-21033	00101-21034	00101-21035	00808-04101	00808-01101	
	4.6	00101-21036	11101-21036	00101-21037	00101-21038	00101-21039	00101-21040	00101-21041	00101-21042	00101-21043	00101-21044	00808-04101	00808-01101	
10 µm	4.0	-	-	-	-	-	-	-	00101-31032	00101-31033	00101-31034	00101-31035	00808-05101	00808-01101
	4.6	-	-	-	-	-	-	00101-31041	00101-31042	00101-31043	00101-31044	00808-05101	00808-01101	

### Xtimate® C8

Particle size	Column ID (mm)	Column Length (mm)										Guard Cartridge	Cartridge holder	
		30	33	50	75	100	125	150	200	250	300			
3 µm	2.1	00102-11009	09102-11009	00102-11010	00102-11011	00102-11012	00102-11013	00102-11014	00102-11015	00102-11016	-	00808-23102	00808-01107	
	3.0	00102-11018	-	00102-11019	00102-11020	00102-11021	00102-11022	00102-11023	00102-11024	00102-11025	-	00808-23102	00808-01107	
	4.0	00102-11027	-	00102-11028	00102-21029	00102-11030	00102-11031	00102-11032	00102-11033	00102-11034	-	00808-03102	00808-01101	
	4.6	00102-11036	11102-11036	00102-11037	00102-21038	00102-11039	00102-11040	00102-11041	00102-11042	00102-11043	-	00808-03102	00808-01101	
5 µm	2.1	00102-21009	09102-21009	00102-21010	00102-21011	00102-21012	00102-21013	00102-21014	00102-21015	00102-21016	-	00808-24102	00808-01107	
	3.0	00102-21018	-	00102-21019	00102-21020	00102-21021	00102-21022	00102-21023	00102-21024	00102-21025	-	00808-24102	00808-01107	
	4.0	00102-21027	-	00102-21028	00102-21029	00102-21030	00102-21031	00102-21032	00102-21033	00102-21034	00102-21035	00808-04102	00808-01101	
	4.6	00102-21036	11102-21036	00102-21037	00102-21038	00102-21039	00102-21040	00102-21041	00102-21042	00102-21043	00102-21044	00808-04102	00808-01101	
10 µm	4.0	-	-	-	-	-	-	-	00102-31032	00102-31033	00102-31034	00102-31035	00808-05102	00808-01101
	4.6	-	-	-	-	-	-	00102-31041	00102-31042	00102-31043	00102-31044	00808-05102	00808-01101	

### Xtimate® Phenyl-Hexyl

Particle size	Column ID (mm)	Column Length (mm)										Guard Cartridge	Cartridge holder
		30	33	50	75	100	125	150	200	250	300		
3 µm	2.1	00104-11009	09104-11009	00104-11010	00104-11011	00104-11012	00104-11013	00104-11014	00104-11015	00104-11016	-	00808-23106	00808-01107
	3.0	00104-11018	-	00104-11019	00104-11020	00104-11021	00104-11022	00104-11023	00104-11024	00104-11025	-	00808-23106	00808-01107
	4.0	00104-11027	-	00104-11028	00104-21029	00104-11030	00104-11031	00104-11032	00104-11033	00104-11034	-	00808-03106	00808-01101
	4.6	00104-11036	11104-11036	00104-11037	00104-21038	00104-11039	00104-11040	00104-11041	00104-11042	00104-11043	-	00808-03106	00808-01101
5 µm	2.1	00104-21009	09104-21009	00104-21010	00104-21011	00104-21012	00104-21013	00104-21014	00104-21015	00104-21016	-	00808-24106	00808-01107
	3.0	00104-21018	-	00104-21019	00104-21020	00104-21021	00104-21022	00104-21023	00104-21024	00104-21025	-	00808-24106	00808-01107
	4.0	00104-21027	-	00104-21028	00104-21029	00104-21030	00104-21031	00104-21032	00104-21033	00104-21034	00104-21035	00808-04106	00808-01101
	4.6	00104-21036	11104-21036	00104-21037	00104-21038	00104-21039	00104-21040	00104-21041	00104-21042	00104-21043	00104-21044	00808-04106	00808-01101

**Xtimate® C4**

Particle size	Column ID (mm)	Column Length (mm)										Guard Cartridge	Cartridge holder
		30	33	50	75	100	125	150	200	250	300		
3 µm	2.1	00107-11009	09107-11009	00107-11010	00107-11011	00107-11012	00107-11013	00107-11014	00107-11015	00107-11016	-	00808-23103	00808-01107
	3.0	00107-11018	-	00107-11019	00107-11020	00107-11021	00107-11022	00107-11023	00107-11024	00107-11025	-	00808-23103	00808-01107
	4.0	00107-11027	-	00107-11028	00107-21029	00107-11030	00107-11031	00107-11032	00107-11033	00107-11034	-	00808-03103	00808-01101
	4.6	00107-11036	11107-11036	00107-11037	00107-21038	00107-11039	00107-11040	00107-11041	00107-11042	00107-11043	-	00808-03103	00808-01101
5 µm	2.1	00107-21009	09107-21009	00107-21010	00107-21011	00107-21012	00107-21013	00107-21014	00107-21015	00107-21016	-	00808-24103	00808-01107
	3.0	00107-21018	-	00107-21019	00107-21020	00107-21021	00107-21022	00107-21023	00107-21024	00107-21025	-	00808-24103	00808-01107
	4.0	00107-21027	-	00107-21028	00107-21029	00107-21030	00107-21031	00107-21032	00107-21033	00107-21034	00107-21035	00808-04103	00808-01101
	4.6	00107-21036	11107-21036	00107-21037	00107-21038	00107-21039	00107-21040	00107-21041	00107-21042	00107-21043	00107-21044	00808-04103	00808-01101

**Xtimate® CN**

Particle size	Column ID (mm)	Column Length (mm)										Guard Cartridge	Cartridge holder
		30	33	50	75	100	125	150	200	250	300		
5 µm	2.1	00105-21009	09105-21009	00105-21010	00105-21011	00105-21012	00105-21013	00105-21014	00105-21015	00105-21016	-	00808-24105	00808-01107
	3.0	00105-21018	-	00105-21019	00105-21020	00105-21021	00105-21022	00105-21023	00105-21024	00105-21025	-	00808-24105	00808-01107
	4.0	00105-21027	-	00105-21028	00105-21029	00105-21030	00105-21031	00105-21032	00105-21033	00105-21034	00105-21035	00808-04105	00808-01101
	4.6	00105-21036	11105-21036	00105-21037	00105-21038	00105-21039	00105-21040	00105-21041	00105-21042	00105-21043	00105-21044	00808-04105	00808-01101

**Xtimate® Polar-RP**

Particle size	Column ID (mm)	Column Length (mm)										Guard Cartridge	Cartridge holder
		30	33	50	75	100	125	150	200	250	300		
5 µm	2.1	00118-21009	09118-21009	00118-21010	00118-21011	00118-21012	00118-21013	00118-21014	00118-21015	00118-21016	-	00808-24111	00808-01107
	3.0	00118-21018	-	00118-21019	00118-21020	00118-21021	00118-21022	00118-21023	00118-21024	00118-21025	-	00808-24111	00808-01107
	4.0	00118-21027	-	00118-21028	00118-21029	00118-21030	00118-21031	00118-21032	00118-21033	00118-21034	00118-21035	00808-04152	00808-01101
	4.6	00118-21036	11118-21036	00118-21037	00118-21038	00118-21039	00118-21040	00118-21041	00118-21042	00118-21043	00118-21044	00808-04152	00808-01101

Don't see your needed size or format? Contact Welch or your local distributor for other dimensions.

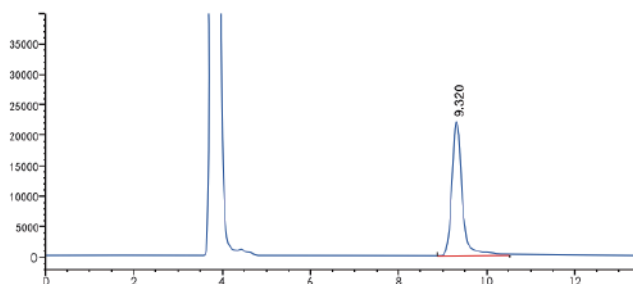


# Xtimate® Lactose-NH<sub>2</sub> Column

A special bonding technique is adopted to make the retention of lactose more stable so that RSD value of lactose peak area is very low.

## Xtimate® Lactose-NH<sub>2</sub>

pH Range	2.0-8.0
Particle Size	5 μm
Surface Area(m <sup>2</sup> /g)	450(120 Å)
Carbon Loading(%)	7(120 Å)
USP List	L8
Endcapped	No



Column:	Xtimate® Lactose-NH <sub>2</sub> , 4.6×250mm, 5μm
Mobile Phase:	Acetonitrile/water=70/30
Flow Rate:	1 mL/min
Detector:	RID (45°C)
Temperature:	40°C
Injection Volume:	10 μL

Rt (min)	Area (nRIU*S)	Height (nRIU)	Symmetrical factor	Width (min)	Plates	Resolution	Selectivity
9.320	3.5546e5	2.20093e4	0.79	0.2298	9103	-	-

## Ordering Information

Dimension	P/N	Guard Cartridge(10mm length)	Guard Column
4.6×300, 5 μm	00121-21044	00808-04151	00808-01101

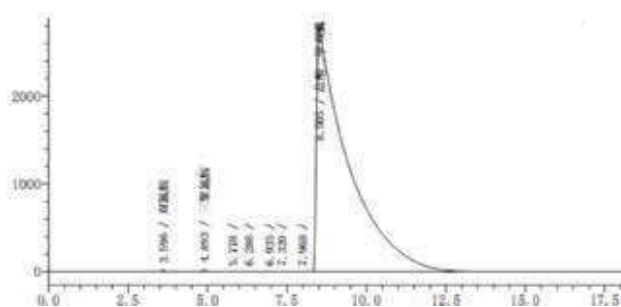
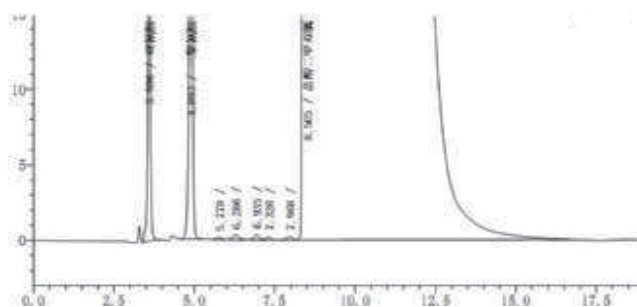
# Xtimate® XB-SCX

Xtimate® XB-SCX column which formed by cations bonded silica gel packing materials is mainly used for the separation of metformin hydrochloride. This column not only makes the resolution of melamine and metformin much greater than 10, but also makes dicyandiamide have excellent peak shape, which completely avoids the interference of solvent peak to dicyandiamide.

## Xtimate® XB-SCX

pH Range	2.0-8.0
Particle Size	5 µm
Surface Area(m <sup>2</sup> /g)	300(120 Å)
Carbon Loading(%)	2(120 Å)
USP List	L9
Endcapped	No

## Determination of content of metformin hydrochloride



Column:	Xtimate® XB-SCX, 4.6×250mm, 5µm
Mobile Phase:	1.7% ammonium dihydrogen phosphate solution, adjust pH to 3.00 with phosphoric acid
Flow Rate:	1 mL/min
Detector:	218nm
Temperature:	Room temperature
Injection Volume:	10 µL

## Ordering Information

Dimension	P/N	Guard Cartridge(10mm length)	Guard Column
4.6×150, 5 µm	00120-21041	00808-04153	00808-01101
4.6×250, 5 µm	00120-21043	00808-04153	00808-01101