



# Boltimate

Core-Shell HPLC Columns

As Fast As Bolt

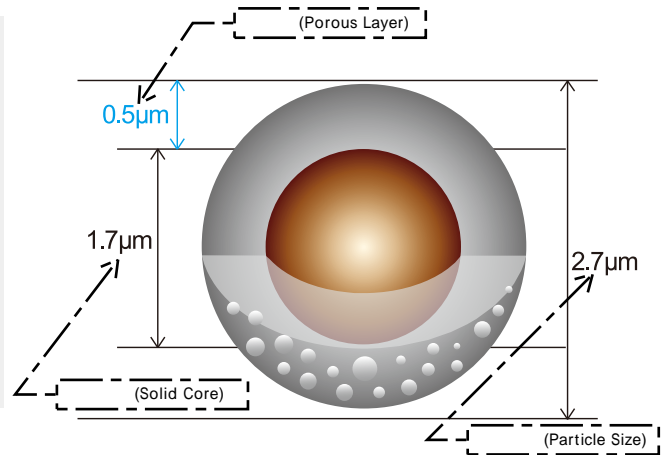
# Boltimate

## Core-Shell HPLC Columns

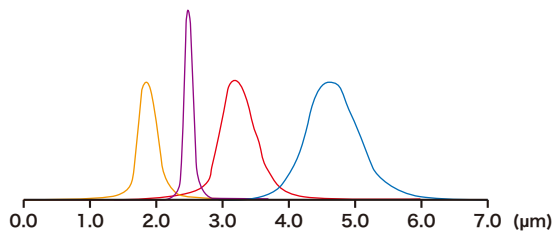
Welch Boltimate core-shell HPLC column 2.7  $\mu\text{m}$  , 1.7  $\mu\text{m}$  solid core 0.5  $\mu\text{m}$   
 sub-2  $\mu\text{m}$  (~200,000p/m)  
 Boltimate core-shell column HPLC UHPLC system

### Features

- sub-2  $\mu\text{m}$  (~200000 p/m)
- HPLC UHPLC
- 2  $\mu\text{m}$  inlet frit
- :600bar



HPLC Boltimatecore-shell

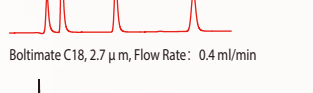
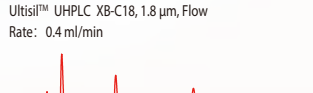
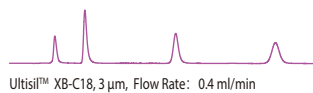


	D10	D90	D90/D10
5 $\mu\text{m}$ porous silica	3.61	5.22	1.44
3 $\mu\text{m}$ porous silica	2.83	3.98	1.41
1.8 $\mu\text{m}$ porous silica	1.51	2.11	1.40
2.7 $\mu\text{m}$ Boltimate core shell silica	2.51	2.81	1.12

■ 1.8  $\mu\text{m}$  porous silica ■ 2.7  $\mu\text{m}$  core-shell silica ■ 3  $\mu\text{m}$  porous silica ■ 5  $\mu\text{m}$  porous silica

### Theoretical plate number and column pressure (based on Naphthalene)

Column	Theoretical plates	Pressure(bar)	Time
Ultisil™ XB-C18, 3 $\mu\text{m}$ , 2.1x50 mm	5600	85	2.0min
Ultisil™ UHPLC XB-C18, 1.8 $\mu\text{m}$ , 2.1x50 mm	10500	260	1.8min
Boltimate C18, 2.7 $\mu\text{m}$ , 2.1x50 mm	10100	108	1.5min
Boltimate C18, 2.7 $\mu\text{m}$ , 2.1x50 mm	9500	190	0.8min



Column: 2.1x50mm  
 Mobile phase: ACN: H<sub>2</sub>O=60:40  
 Temperature: 24°C  
 HPLC instrument: Agilent 1290  
 Flow cell: 1L

- Injection Volume: 1  $\mu\text{L}$   
 Samples:  
 1. Uracil  
 2. Phenol  
 3. 4-Chloro Nitrobenzene  
 4. Naphthalene

Boltimate C18 1.8  $\mu\text{m}$  porous C18  
 3  $\mu\text{m}$  porous C18  
 Boltimate  
 1.8  $\mu\text{m}$  porous C18

0.0 0.5 1.0 1.5 2.0



## Detection of ginsenosides:

### Chromatographic conditions:

Column: three types of C18 columns from Welch / Temperature: room temperature / Detection : UV 203 nm

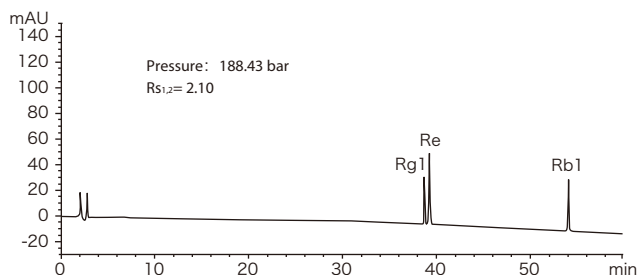
Mobile phase A: 0.1% $H_3PO_4$  in water / Mobile phase B: Acetonitrile

#### 1. Welch Ultisil™ XB-C18 (4.6×250 mm, 5 μm), separation of ginsenosides

Flow rate: 1.3 ml/min Injection volume: 10 μl

Gradient program:

Time (min)	Mobile phase A (%)	Mobile phase B (%)
0	81	19
30	81	19
35	76	24
60	60	40
60.1	0	100
70	0	100
70.1	81	19
78	81	19



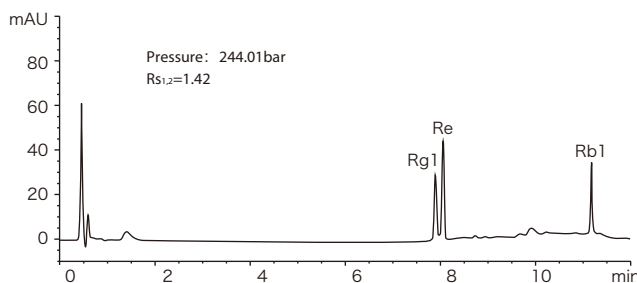
Welch Ultisil™ XB-C18, 4.6×250mm, 5μm, separation of three ginsenosides

#### 2. Welch Ultisil™ UHPLC XB-C18 (2.1×50 mm, 1.8 μm), separation of ginsenosides

Flow rate: 0.27ml/min Injection volume: 0.7 μl

Gradient program:

Time (min)	Mobile phase A (%)	Mobile phase B (%)
0	81	19
6	81	19
7	76	24
12	60	40
12.1	0	100
14	0	100
15	81	19
18	81	19



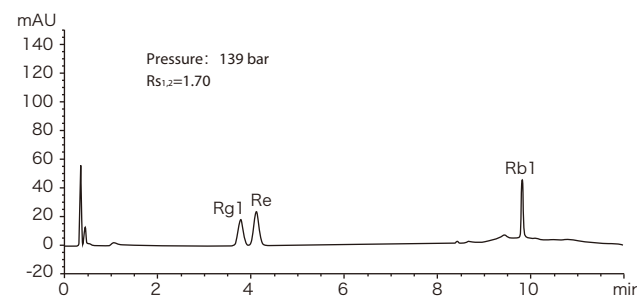
Welch Ultisil™ XB-C18, 2.1×50mm, 1.8μm, separation of three ginsenosides

#### 3. Welch Boltimate™ C18 (3.0×50 mm, 2.7 μm), separation of ginsenosides

Flow rate: 0.55ml/min Injection volume: 1.7 μl

Gradient program:

Time (min)	Mobile phase A (%)	Mobile phase B (%)
0	81	19
6	81	19
7	76	24
12	60	40
12.01	0	100
14	0	100
15	81	19
18	81	19



Welch Boltimate™ C18, 3.0×50 mm, 2.7μm, separation of three ginsenosides

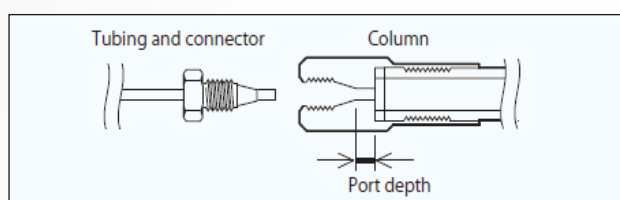
From the results above, Boltimate core-shell column has a lower column pressure and faster analysis time, and the resolution is high.

## Welch provides a variety of bonding phases

Bonding phases	Feature Description	Particle Size μm	Solid Core Diameter μm	Porous Shell Depth μm	Pore Size Å	Surface Area m <sup>2</sup> /g	C%	End/capped	pH Range	Maximum Pressure Bar	USP
C18	Excellent peak shape and resolution for acids, bases, and neutrals. Exceptional resolution and lifetime.	2.7	1.7	0.5	90	120	9	Double	2-8.5	600	L1
Phenyl-Hexyl	Alternative selectivity for phenyl groups	2.7	1.7	0.5	90	120	7	Double	2-8.5		L11
EXT-C18	The exist of hybrid organic/inorganic layer extend pH range of silica. pH range: 1.5-12	2.7	1.7	0.5	90	120	8	Double	1.5-12		L1
EXT-PFP	An alternative selectivity for halogenated compounds and polar analytes. Wide pH range.	2.7	1.7	0.5	90	120	5	Double	1.5-10		L43
HILIC	With its unbonded silica, Boltimate HILIC retains and separates polar analytes.	2.7	1.7	0.5	90	120	-	-	2-8.5		L3

## Ordering information

2.7µm, 90Å, Boltimate Core Shell Column					
Size (mm)	C18	Phenyl-Hexyl	EXT-C18	EXT-PFP	HILIC
2.1×30	960-04009	961-04009	962-04009	963-04009	964-04009
2.1×50	960-04010	961-04010	962-04010	963-04010	964-04010
2.1×75	960-04011	961-04011	962-04011	963-04011	964-04011
2.1×100	960-04012	961-04012	962-04012	963-04012	964-04012
2.1×150	960-04014	961-04014	962-04014	963-04014	964-04014
3.0×30	960-04018	961-04018	962-04018	963-04018	964-04018
3.0×50	960-04019	961-04019	962-04019	963-04019	964-04019
3.0×75	960-04020	961-04020	962-04020	963-04020	964-04020
3.0×100	960-04021	961-04021	962-04021	963-04021	964-04021
3.0×150	960-04023	961-04023	962-04023	963-04023	964-04023
4.6×30	960-04036	961-04036	962-04036	963-04036	964-04036
4.6×50	960-04037	961-04037	962-04037	963-04037	964-04037
4.6×75	960-04038	961-04038	962-04038	963-04038	964-04038
4.6×100	960-04039	961-04039	962-04039	963-04039	964-04039
4.6×150	960-04041	961-04041	962-04041	963-04041	964-04041
4.6×250	960-04043	961-04043	962-04043	963-04043	964-04043



Port style of Endfitting	Port depth
Parker	2mm

An in-line filter or a guard column can save your money by extending the life of your analytical column.

### Inline Filter for Boltimate:

	P/N	Description
Direct connect inline filter, maximum pressure 15000psi. Inline filter, cannot be replaced	00808-01221	Pre-column inline filter, 0.5µm
Direct connect inline filter, maximum pressure 18000psi.	00808-01222	Direct connect inline filter, contain 5 replaceable filters(0.2µm)
	00808-UF020	Replaceable filters(0.2µm)

### Guard Column for Boltimate

	P/N	Description
Direct connect guard column, maximum pressure 15000psi, contain 5mm cartridge	00808-01109	Direct connect guard column

Replaceable cartridge, 5mm length Maximum pressure 15000psi Boltimate packing material	<b>According to your HPLC column ID(mm):</b>	
	2.0-3.0	3.2-8.0
	<b>Choose suitable cartridge (mm):</b>	
Boltimate C18	U808-960-25	U808-960-45
Boltimate Phenyl-Hexyl	U808-961-25	U808-961-45
Boltimate EXT-C18	U808-962-25	U808-962-45
Boltimate EXT-PFP	U808-963-25	U808-963-45
Boltimate HILIC	U808-964-25	U808-964-45

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**welch**  
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