

# Higgins Analytical Targa HPLC Columns



- 120Å pore size
- Carbon Loading:  
C8 = 8%; C18 = 16%
- Surface area: 330m<sup>2</sup>/g
- LC/MS without TFA!

TARGA columns and cartridges are ideal for applications requiring an absence of secondary solute-silanol interaction. Basic and acidic drugs and peptides can be chromatographed efficiently with little or no buffer. Targa columns are particularly well suited for LC/MS applications where acetic acid or formic acid can be substituted for TFA resulting in significant increase in signal. Also, Targa columns work well in 100% aqueous conditions for hydrophilic applications.

## C18, 5µm Targa Stainless Steel Columns

Phase	Column ID	30mm	50mm	100mm	150mm	250mm
C18	4.6mm	TS-0346-C185	TS-0546-C185	TS-1046-C185	TS-1546-C185	TS-2546-C185
	3.0mm	TS-0330-C185	TS-0530-C185	TS-1030-C185	TS-1530-C185	TS-2530-C185
	2.1mm	TS-0321-C185	TS-0521-C185	TS-1021-C185	TS-1521-C185	TS-2521-C185
C18	1.0mm	TS-0301-C185	TS-0501-C185	TS-1000-C185	TS-1501-C185	TS-2501-C185
	0.5mm	TS-03M5-C185	TS-05M5-C185	TS-10M5-C185	TS-15M5-C185	
	0.3mm	TS-03M3-C185	TS-05M3-C185	TS-10M3-C185		

## C18, 5µm Targa Capillary HPLC Columns, Capillini™

C18	0.150mm	TC-0515-C185	TC-1015-C185	TC-1515-C185	TC-2515-C185
C18	0.075mm	TC-0507-C185	TC-1007-C185	TC-1507-C185	TC-2507-C185

## C18, 3µm Targa Stainless Steel Columns

C18	4.6mm	TS-0346-C183	TS-0546-C183	TS-1046-C183	TS-1546-C183	TS-2546-C183
	3.0mm	TS-0330-C183	TS-0530-C183	TS-1030-C183	TS-1530-C183	TS-2530-C183
	2.1mm	TS-0321-C183	TS-0521-C183	TS-1021-C183	TS-1521-C183	TS-2521-C183
C18	1.0mm	TS-0301-C183	TS-0501-C183	TS-1001-C183	TS-1501-C183	TS-2501-C183
	0.5mm	TS-03M5-C183	TS-05M5-C183	TS-10M5-C183	TS-15M5-C183	
	0.3mm	TS-03M3-C183	TS-05M3-C183	TS-10M3-C183		

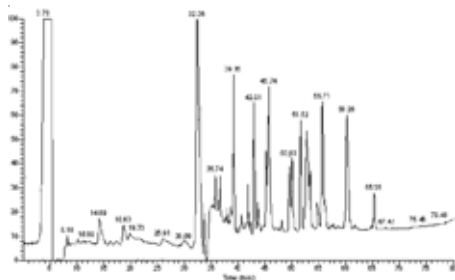
## C8, 5µm Targa Stainless Steel Columns

C8	4.6mm	TS-0346-C085	TS-0546-C085	TS-1046-C085	TS-1546-C085	TS-2546-C085
	3.0mm	TS-0330-C085	TS-0530-C085	TS-1030-C085	TS-1530-C085	TS-2530-C085
	2.1mm	TS-0321-C085	TS-0521-C085	TS-1021-C085	TS-1521-C085	TS-2521-C085
C8	1.0mm	TS-0301-C085	TS-0501-C085	TS-1001-C085	TS-1501-C085	TS-2501-C085
	0.5mm	TS-03M5-C085	TS-05M5-C085	TS-10M5-C085	TS-15M5-C085	
	0.3mm	TS-03M3-C085	TS-05M3-C085	TS-10M3-C085		

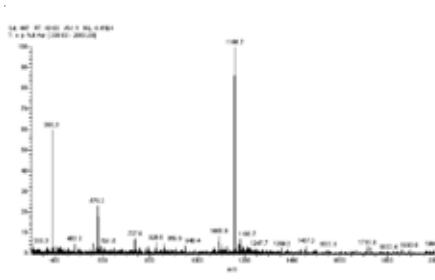
## Tryptic Map of Human Ocular Lens Proteins

beta A1 crystallin and gamma S crystallin  
Targa C18 5µm, 150x0.5mm

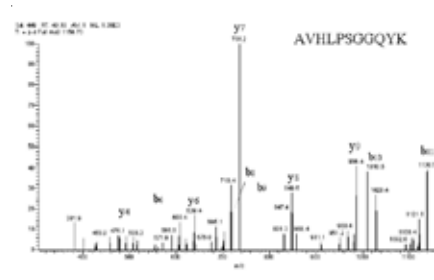
Solvent A: 0.1% Acetic Acid  
Solvent B: 0.1% Acetic Acid, 65% MeCN  
0-50% B in 60 min., 50-100%B in 15 min.



Sample is a tryptic digest of a 2D electrophoresis separated spot digested from PDVF membrane. The two ocular proteins are ~25kD.



The LC/MS zoom scan above confirms the peak at 39.15min is singly charged.



Software interpretation of the MS/MS scan above confirms the 1156.6 ion as residues 84-94 in human gamma S crystallin.

# Higgins Analytical Targa HPLC Columns

## Targa Analytical Guard Cartridges

### TARGA™ Guard Cartridges 20mm Length, 5/pk

Phase	Particle Size	3.2mm ID SS	2.1mm ID PEEK
C18	5µm	T118	TK-0221-C185
C8	5µm	T108	TK-0221-C085

### Guard Cartridge Holder Kits

Cat. No.	Description
HK-GUARD-FM	Direct-Connect (female/male)
WK-GUARD-FM	Direct-Connect for Waters columns
HK-GUARD-FF	Symmetrical Connection (female/female)

## Piccolo™ Short Microbore Columns

- Tested and supplied with Certificate of Analysis
- PEEK/Titanium construction
- 6-32 threads for capillary fittings
- Typical applications: LC-MS, ballistic gradients, desalting, trap column, trace enrichment, guard column

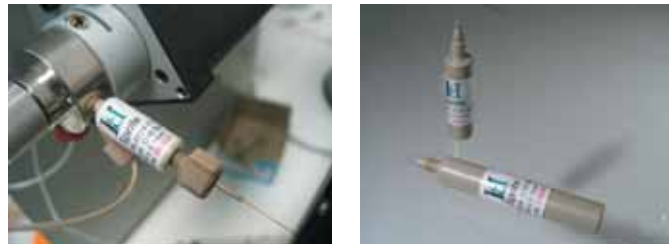


### Targa Piccolo Short Microbore HPLC Columns

Cat. No.	Description
TP-0101-C185	C18 Targa, 1.0mm ID x 10mm
TP-M501-C185	C18 Targa, 1.0mm ID x 5mm
TP-M2M5-C185	C18 Targa, 0.5mm ID x 2.5mm


## Direct Connect Sprite™ HPLC Columns

- Tested and supplied with Certificate of Analysis
- Direct connect (10-32 thread) Sprite HPLC columns require no tools for leak-free finger-tight connection
- Available in the Targa, Clipeus, and Haisil HL material



### Targa Direct Connect Sprite™ Ordering Information

Cat. No.	Description
TR-0421-C185	C18 Targa, 2.1mm ID x 40mm
TR-0221-C185	C18 Targa, 2.1mm ID x 20mm
TR-0121-C185	C18 Targa, 2.1mm ID x 10mm



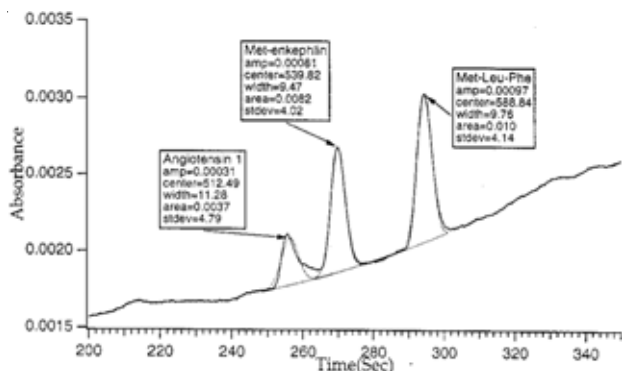
**New! Capellini™ HPLC Columns** are robust, high performance capillary HPLC columns for LC-MS and other small scale applications. Each column is tested and supplied with CofA. The column is made of PEEK/Titanium fittings, 6-32 threads.

## LC/MS without TFA

Researchers have shown that Higgins Analytical's TARGA C8 and C18 phases have an extremely well protected silanol surface. An acetonitrile/water 1%/min gradients with as little as 0.05% acetic acid gives a very satisfactory peptide map on a short 5cm x 1mm TARGA C18 column. The ability to buffer with acetic or formic acid rather than TFA greatly enhances signals for LC/MS techniques.

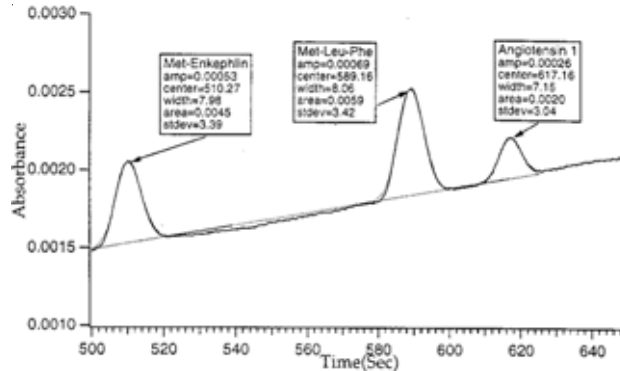
### Basic Peptides

with 0.1% Acetic Acid pH 2.2  
TARGA C18 5µm 50x1.0mm



### Basic Peptides

with 0.1% TFA pH 2.2  
TARGA C18 5µm 50x1.0mm



While TARGA columns give exceptional performance without TFA buffer, it does not mean that you are precluded from using it. In fact, the changes in selectivity that comes with changing buffer acids can be a powerful tool for separation optimization. Notice how the peptide elution orders change between the acetic acid and TFA buffered chromatograms.

# Higgins Analytical Clipeus HPLC Columns

- 120Å pore size
- Carbon Loading: C18 = 18%
- Surface area: 330m<sup>2</sup>/g



The high purity base silica and thoroughly end-capped bonded phases insure that CLIPEUS columns and cartridges will perform well in demanding situations where many other column brands fail. Even polar compounds elute as sharp and symmetrical peaks permitting surprisingly short columns to be used for high speed analysis. In addition to C8 and C18 phases, this family of columns is offered with phenyl or cyano functionality.

## Clipeus – A Small Shield

Higgins Analytical places a great deal of emphasis on effective silanol end-capping techniques. The bulky size and secondary chemical functionality of the end-capping moiety on Targa (a large shield) HPLC columns and cartridges make them popular choices for

researchers developing powerful LC/MS techniques or chromatographers doing routine analysis of difficult polar compounds.

Our Clipeus C18 columns are based on the same ultra-pure, Type B silica gel we use for our Targa products, but the end-capping is done with the more traditional methodology employing TMS, a small molecule; hence Clipeus – “a small shield”. Clipeus columns have Higgins Analytical’s characteristically high lot-to-lot reproducibility because our carefully controlled reaction of monofunctional silanes can be driven to completion in a reproducible manner.



**New!** Capellini™ HPLC Columns are robust, high performance capillary HPLC columns for LC/MS and other small scale applications. Each column is tested and supplied with CofA. The column is made of PEEK/Titanium fittings, 6-32 threads.

## C18, 5µm Clipeus Stainless Steel Columns

Phase	Column ID	30mm	50mm	100mm	150mm	250mm
C18	4.6mm	CS-0346-C185	CS-0546-C185	CS-1046-C185	CS-1546-C185	CS-2546-C185
	3.0mm	CS-0330-C185	CS-0530-C185	CS-1030-C185	CS-1530-C185	CS-2530-C185
	2.1mm	CS-0321-C185	CS-0521-C185	CS-1021-C185	CS-1521-C185	CS-2521-C185
C18	1.0mm	CS-0301-C185	CS-0501-C185	CS-1001-C185	CS-1501-C185	CS-2501-C185
	0.5mm	CS-03M5-C185	CS-05M5-C185	CS-10M5-C185	CS-15M5-C185	
	0.3mm	CS-03M3-C185	CS-05M3-C185	CS-10M3-C185		

## C18, 5µm Clipeus Capillary HPLC Columns, Capellini™

C18	0.150mm	CC-0515-C185	CC-1015-C185	CC-1515-C185	CC-2515-C185
C18	0.075mm	CC-0507-C185	CC-1007-C185	CC-1507-C185	CC-2507-C185

## C8, 5µm Clipeus Stainless Steel Columns

C8	4.6mm	CS-0346-C085	CS-0546-C085	CS-1046-C085	CS-1546-C085	CS-2546-C085
	3.0mm	CS-0330-C085	CS-0530-C085	CS-1030-C085	CS-1530-C085	CS-2530-C085
	2.1mm	CS-0321-C085	CS-0521-C085	CS-1021-C085	CS-1521-C085	CS-2521-C085
C8	1.0mm	CS-0301-C085	CS-0501-C085	CS-1001-C085	CS-1501-C085	CS-2501-C085
	0.5mm	CS-03M5-C085	CS-05M5-C085	CS-10M5-C085	CS-15M5-C085	
	0.3mm	CS-03M3-C085	CS-05M3-C085	CS-10M3-C085		

## Cyano, 5µm Clipeus Stainless Steel Columns

Cyano	4.6mm	CS-0346-CNP5	CS-0546-CNP5	CS-1046-CNP5	CS-1546-CNP5	CS-2546-CNP5
	3.0mm	CS-0330-CNP5	CS-0530-CNP5	CS-1030-CNP5	CS-1530-CNP5	CS-2530-CNP5
	2.1mm	CS-0321-CNP5	CS-0521-CNP5	CS-1021-CNP5	CS-1521-CNP5	CS-2521-CNP5
Cyano	1.0mm	CS-0301-CNP5	CS-0501-CNP5	CS-1001-CNP5	CS-1501-CNP5	CS-2501-CNP5
	0.5mm	CS-03M5-CNP5	CS-05M5-CNP5	CS-10M5-CNP5	CS-15M5-CNP5	
	0.3mm	CS-03M3-CNP5	CS-05M3-CNP5	CS-10M3-CNP5		

## Phenyl, 5µm Clipeus Stainless Steel Columns

Phenyl	4.6mm	CS-0346-PHN5	CS-0546-PHN5	CS-1046-PHN5	CS-1546-PHN5	CS-2546-PHN5
	3.0mm	CS-0330-PHN5	CS-0530-PHN5	CS-1030-PHN5	CS-1530-PHN5	CS-2530-PHN5
	2.1mm	CS-0321-PHN5	CS-0521-PHN5	CS-1021-PHN5	CS-1521-PHN5	CS-2521-PHN5
Phenyl	1.0mm	CS-0301-PHN5	CS-0501-PHN5	CS-1001-PHN5	CS-1501-PHN5	CS-2501-PHN5
	0.5mm	CS-03M5-PHN5	CS-05M5-PHN5	CS-10M5-PHN5	CS-15M5-PHN5	
	0.3mm	CS-03M3-PHN5	CS-05M3-PHN5	CS-10M3-PHN5		

# Higgins Analytical Clipeus HPLC Columns

## Clipeus Analytical Guard Cartridges

### Clipeus™ Guard Cartridges, 5µm, 20mm Length, 5/pk

Phase	3.2mm ID SS	2.1mm ID PEEK
C18	C118	CK-0221-C185
C8	C108	CK-0221-C085
Cyano	C1CN	CK-0221-CNP5
Phenyl	C1PH	CK-0221-PHN5

### Guard Cartridge Holder Kits

Cat. No.	Description
HK-GUARD-FM	Direct-Connect (female/male)
WK-GUARD-FM	Direct-Connect for Waters columns
HK-GUARD-FF	Symmetrical connection (female/female)

## Piccolo™ Short Microbore Columns

- Tested and supplied with Certificate of Analysis
- PEEK/Titanium construction
- 6-32 threads for capillary fittings
- Typical applications: LC/MS, ballistic gradients, desalting, trap column, trace enrichment, guard column



### Clipeus Piccolo Short Microbore HPLC Columns

Cat. No.	Description
CP-0101-C185	C18 Clipeus, 1.0mm ID x 10mm
CP-M501-C185	C18 Clipeus, 1.0mm ID x 5mm
CP-M2M5-C185	C18 Clipeus, 0.5mm ID x 2.5mm

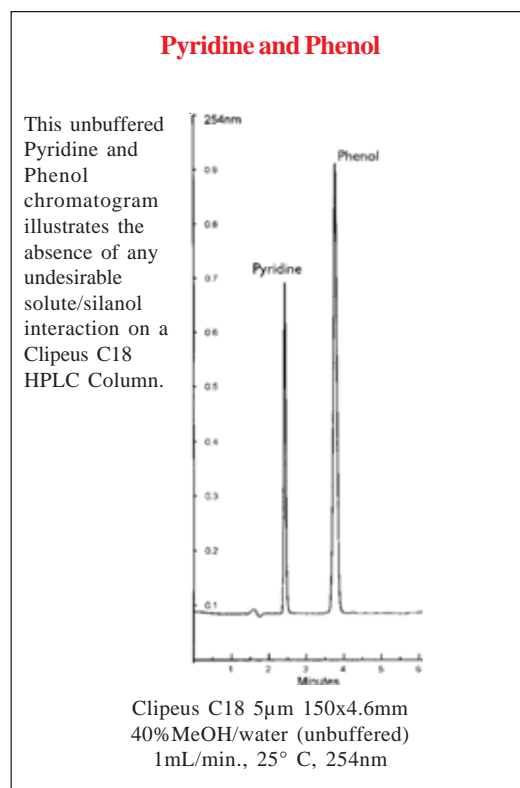
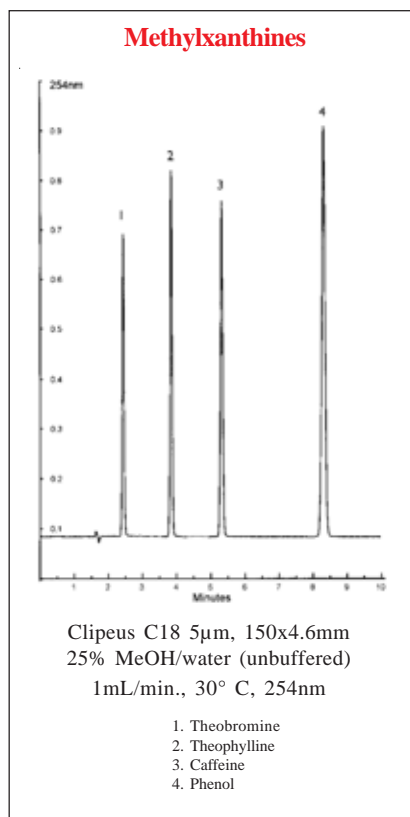
## Direct Connect Sprite™ HPLC Columns

- Tested and supplied with Certificate of Analysis
- Direct connect (10-32 thread) Sprite HPLC columns require no tools for leak-free finger-tight connection
- Available in the Targa, Clipeus, and Haisil HL material



### Clipeus Direct Connect Sprite™ Ordering Information

Cat. No.	Description
CR-0421-C185	C18 Clipeus, 2.1mm ID x 40mm
CR-0221-C185	C18 Clipeus, 2.1mm ID x 20mm
CR-0121-C185	C18 Clipeus, 2.1mm ID x 10mm



# Higgins Analytical Haisil™ HL

- 100Å pore size
- Carbon Loading: C18 = 18%
- Surface area: 300m<sup>2</sup>/g

# Ha

Haisil HL “high load” columns and cartridges are intended for applications requiring maximum loading and selectivity. The high surface area permits high bonded phase loading yet the monofunctional bonded phase and the absence of micropores eliminates the problems that plague many of the so-called “high capacity” columns currently on the market.

The Type B silica backbone is pure, robust, and stable under harsh conditions. Users report satisfactory lifetime when used for prolonged periods at pH as high as 9.



**New! Capellini™ HPLC Columns** are robust, high performance capillary HPLC columns for LC/MS and other small scale applications. Each column is tested and supplied with CofA. The column is made of PEEK/Titanium fittings, 6-32 threads.

## C18, 5µm Haisil HL Stainless Steel Columns

Phase	Column ID	30mm	50mm	100mm	150mm	250mm
C18	4.6mm	LS-0346-C185	LS-0546-C185	LS-1046-C185	LS-1546-C185	LS-2546-C185
	3.0mm	LS-0330-C185	LS-0530-C185	LS-1030-C185	LS-1530-C185	LS-2530-C185
	2.1mm	LS-0321-C185	LS-0521-C185	LS-1021-C185	LS-1521-C185	LS-2521-C185
C18	1.0mm	LS-0301-C185	LS-0501-C185	LS-1001-C185	LS-1501-C185	LS-2501-C185
	0.5mm	LS-03M5-C185	LS-05M5-C185	LS-10M5-C185	LS-15M5-C185	
	0.3mm	LS-03M3-C185	LS-05M3-C185	LS-10M3-C185		

## C18, 5µm Haisil HL Capillary HPLC Columns

C18	0.150mm	LC-0515-C185	LC-1015-C185	LC-1515-C185	LS-2515-C185
	0.075mm	LC-0507-C185	LC-1007-C185	LC-1507-C185	LS-2507-C185

## C18, 5µm Haisil HL Preparative HPLC Columns

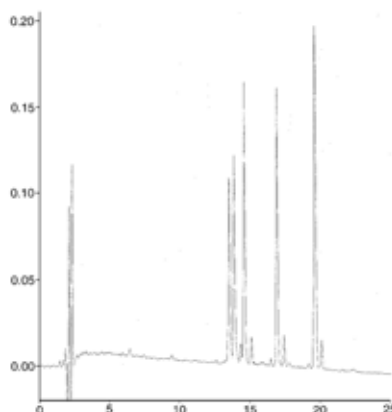
C18	20.0mm	LS-0520-C185	LS-1020-C185	LS-1520-C185	LS-2520-C185
	10.0mm	LS-0510-C185	LS-1010-C185	LS-1510-C185	LS-2510-C185

## C18, 3µm Haisil™ HL Stainless Steel Columns

C18	4.6mm	LS-0346-C183	LS-0546-C183	LS-1046-C183	LS-1546-C183	LS-2546-C183
	3.0mm	LS-0330-C183	LS-0530-C183	LS-1030-C183	LS-1530-C183	LS-2530-C183
	2.1mm	LS-0321-C183	LS-0521-C183	LS-1021-C183	LS-1521-C183	LS-2521-C183
C18	1.0mm	LS-0301-C183	LS-0501-C183	LS-1001-C183	LS-1501-C183	
	0.5mm	LS-03M5-C183	LS-05M5-C183	LS-10M5-C183	LS-15M5-C183	
	0.3mm	LS-03M3-C183	LS-05M3-C183	LS-10M3-C183		

## HPLC Peptide Standards on Haisil HL

The aromatic hydrocarbons that most HPLC column manufacturers use to quality control columns render little information about a column’s selectivity and performance characteristics for peptides. The Canadian corporation, SPI, produces a well characterized yet challenging peptide mixture that is very useful for quantifying HPLC column performance for peptides. The difficult to separate first pair of peptides are resolved to near baseline on Haisil C18 columns. Many so-called peptid analysis columns are unable to separate this pair.



1. H<sub>2</sub>N-RGAGGLGLGK-amide
2. AC-RGGGLGLGK-amide
3. AC-RGAGGLGLGK-amide
4. AC-RGVVGLGLGK-amide
5. AC-RGVVGLGLGK-amide

“Hodges Test Peptide Mix”  
(from Synthetic Peptides, Inc.)  
Haisil HL C18 5µm, 150x4.6mm

## Haisil HL Analytical Guard Cartridges

### Haisil HL Guard Cartridges 20mm Length, 5/pk

Phase	Particle Size	3.2mm ID SS	2.1mm ID PEEK
C18	5µm	L118	LK-0221-C185

### Guard Cartridge Holder Kits

Cat. No.	Description
HK-GUARD-FM	Direct-Connect (female/male)
WK-GUARD-FM	Direct-Connect for Waters columns
HK-GUARD-FF	Symmetrical connection (female/female)



- Haisil HL Specifications:
  - 100Å pore size
  - Carbon Loading: C18 = 18%
  - Surface area: 300m<sup>2</sup>/g

## Piccolo™ Short Microbore Columns

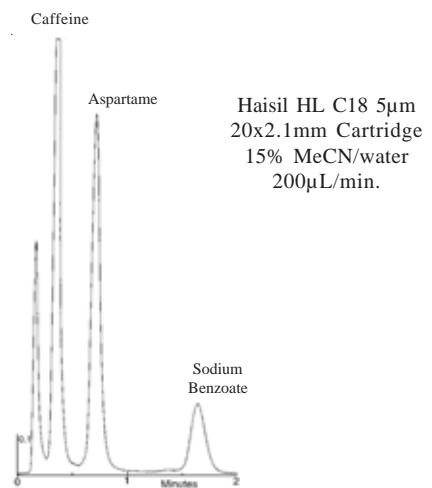
- Tested and supplied with Certificate of Analysis
- PEEK/Titanium construction
- 6-32 threads for capillary fittings
- Typical applications: LC-MS, ballistic gradients, desalting, trap column, trace enrichment, guard column



### Haisil HL Piccolo Short Microbore HPLC Columns

Cat. No.	Description
LP-0101-C185	C18 Haisil HL, 1.0mm ID x 10mm
LP-M501-C185	C18 Haisil HL, 1.0mm ID x 5mm
LP-M2M5-C185	C18 Haisil HL, 0.5mm ID x 2.5mm

### Fast Diet Cola Analysis



## Direct Connect Sprite™ HPLC Columns

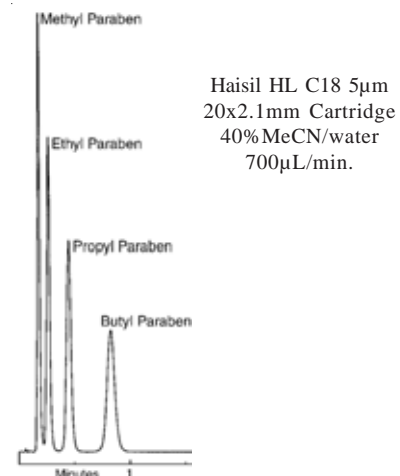
- Tested and supplied with Certificate of Analysis
- Direct connect (10-32 thread) Sprite HPLC columns require no tools for leak-free finger-tight connection
- Available in the Targa, Clipeus, and Haisil HL material



### Haisil HL Direct Connect Sprite™ Ordering Information

Cat. No.	Description
LR-0421-C185	C18 Haisil HL, 2.1mm ID x 40mm
LR-0221-C185	C18 Haisil HL, 2.1mm ID x 20mm
LR-0121-C185	C18 Haisil HL, 2.1mm ID x 10mm

### Fast Paraben Analysis



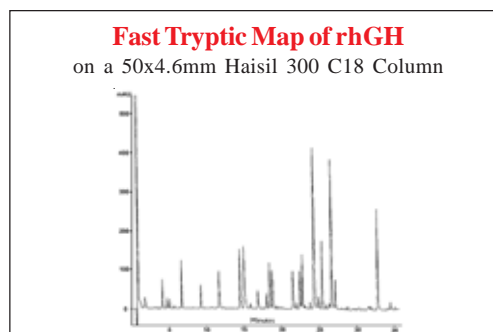
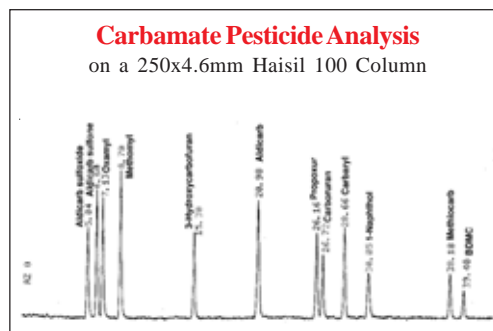
# Higgins Analytical Haisil™ HPLC Columns

## Haisil 100 and 300 HPLC Columns

- **Haisil 100 Specifications:**
  - 100Å pore size
  - Carbon loading: C8 = 7%; C18 = 12%
  - Surface area: 190m<sup>2</sup>/g
- **Haisil 300 Specifications:**
  - 300Å pore size
  - Carbon loading: C4 = 3%; C8 = 4%; C18 = 6%
  - Surface area: 80m<sup>2</sup>/g

**HAISIL 100** columns are very good general purpose columns that are particularly well suited for small molecules and peptide applications. The HAISIL 100 column and cartridge efficiencies are unrivaled yet they represent one of the most economical product lines in the market today.

**HAISIL 300** columns are ideal for biomolecule separations such as peptides and small proteins. Optimized phase bonding and column packing techniques assure unsurpassed performance and column-to-column reproducibility in comparison to other so-called wide pore reverse phase columns offered by other manufacturers.



### C18, 5µm Haisil 100 Stainless Steel Columns

Phase	Column ID	30mm	50mm	100mm	150mm	250mm
C18	4.6mm	HS-0346-M185	HS-0546-M185	HS-1046-M185	HS-1546-M185	HS-2546-M185
	3.0mm	HS-0330-M185	HS-0530-M185	HS-1030-M185	HS-1530-M185	HS-2530-M185
	2.1mm	HS-0321-M185	HS-0521-M185	HS-1021-M185	HS-1521-M185	HS-2521-M185
C18	1.0mm	HS-0301-M185	HS-0501-M185	HS-1001-M185	HS-1501-M185	HS-2501-M185
	0.5mm	HS-03M5-M185	HS-05M5-M185	HS-10M5-M185	HS-15M5-M185	HS-25M5-M185
	0.3mm	HS-03M3-M185	HS-05M3-M185	HS-10M3-M185		

### C18, 3µm Haisil 100 Stainless Steel Columns

C18	4.6mm	HS-0346-M183	HS-0546-M183	HS-1046-M183	HS-1546-M183	HS-2546-M183
	3.0mm	HS-0330-M183	HS-0530-M183	HS-1030-M183	HS-1530-M183	HS-2530-M183
	2.1mm	HS-0321-M183	HS-0521-M183	HS-1021-M183	HS-1521-M183	HS-2521-M183
C18	1.0mm	HS-0301-M183	HS-0501-M183	HS-1001-M183	HS-1501-M183	HS-2501-M183
	0.5mm	HS-03M5-M183	HS-05M5-M183	HS-10M5-M183	HS-15M5-M183	HS-25M5-M183
	0.3mm	HS-03M3-M183	HS-05M3-M183	HS-10M3-M183		

### C8, 5µm Haisil 100 Stainless Steel Columns

C8	4.6mm	HS-0346-M085	HS-0546-M085	HS-1046-M085	HS-1546-M085	HS-2546-M085
	3.0mm	HS-0330-M085	HS-0530-M085	HS-1030-M085	HS-1530-M085	HS-2530-M085
	2.1mm	HS-0321-M085	HS-0521-M085	HS-1021-M085	HS-1521-M085	HS-2521-M085
C8	1.0mm	HS-0301-M085	HS-0501-M085	HS-1001-M085	HS-1501-M085	HS-2501-M085
	0.5mm	HS-03M5-M085	HS-05M5-M085	HS-10M5-M085	HS-15M5-M085	HS-25M5-M085
	0.3mm	HS-03M3-M085	HS-05M3-M085	HS-10M3-M085		

### Silica, 5µm Haisil 100 Stainless Steel Columns

Silica	4.6mm	HS-0346-SIL5	HS-0546-SIL5	HS-1046-SIL5	HS-1546-SIL5	HS-2546-SIL5
	3.0mm	HS-0330-SIL5	HS-0530-SIL5	HS-1030-SIL5	HS-1530-SIL5	HS-2530-SIL5
	2.1mm	HS-0321-SIL5	HS-0521-SIL5	HS-1021-SIL5	HS-1521-SIL5	HS-2521-SIL5
Silica	1.0mm	HS-0301-SIL5	HS-0501-SIL5	HS-1001-SIL5	HS-1501-SIL5	HS-2501-SIL5
	0.5mm	HS-03M5-SIL5	HS-05M5-SIL5	HS-10M5-SIL5	HS-15M5-SIL5	HS-25M5-SIL5
	0.3mm	HS-03M3-SIL5	HS-05M3-SIL5	HS-10M3-SIL5		

# Higgins Analytical Haisil™ HPLC Columns

## C18, 5µm Haisil 300 Stainless Steel Columns

Phase	Column ID	30mm	50mm	100mm	150mm	250mm
C18	4.6mm	HS-0346-W185	HS-0546-W185	HS-1046-W185	HS-1546-W185	HS-2546-W185
	3.0mm	HS-0330-W185	HS-0530-W185	HS-1030-W185	HS-1530-W185	HS-2530-W185
	2.1mm	HS-0321-W185	HS-0521-W185	HS-1021-W185	HS-1521-W185	HS-2521-W185
C18	1.0mm	HS-0301-W185	HS-0501-W185	HS-1001-W185	HS-1501-W185	HS-2501-W185
	0.5mm	HS-03M5-W185	HS-05M5-W185	HS-10M5-W185	HS-15M5-W185	
	0.3mm	HS-03M3-W185	HS-05M3-W185	HS-10M3-W185		

## C8, 5µm Haisil 300 Stainless Steel Columns

C8	4.6mm	HS-0346-W085	HS-0546-W085	HS-1046-W085	HS-1546-W085	HS-2546-W085
	3.0mm	HS-0330-W085	HS-0530-W085	HS-1030-W085	HS-1530-W085	HS-2530-W085
	2.1mm	HS-0321-W085	HS-0521-W085	HS-1021-W085	HS-1521-W085	HS-2521-W085
C8	1.0mm	HS-0301-W085	HS-0501-W085	HS-1001-W085	HS-1501-W085	HS-2501-W085
	0.5mm	HS-03M5-W085	HS-05M5-W085	HS-10M5-W085	HS-15M5-W085	
	0.3mm	HS-03M3-W085	HS-05M3-W085	HS-10M3-W085		

## C4, 5µm Haisil 300 Stainless Steel Columns

C4	4.6mm	HS-0346-W045	HS-0546-W045	HS-1046-W045	HS-1546-W045	HS-2546-W045
	3.0mm	HS-0330-W045	HS-0530-W045	HS-1030-W045	HS-1530-W045	HS-2530-W045
	2.1mm	HS-0321-W045	HS-0521-W045	HS-1021-W045	HS-1521-W045	HS-2521-W045
C4	1.0mm	HS-0301-W045	HS-0501-W045	HS-1001-W045	HS-1501-W045	HS-2501-W045
	0.5mm	HS-03M5-W045	HS-05M5-W045	HS-10M5-W045	HS-15M5-W045	
	0.3mm	HS-03M3-W045	HS-05M3-W045	HS-10M3-W045		



## Haisil Analytical Guard Cartridges

### Haisil 100 Guard Cartridges 20mm Length, 5/pk

Phase	Particle Size	3.2mm ID SS	2.1mm ID PEEK
C18	5µm	H118	HK-0221-C185
C8	5µm	H108	HK-0221-C085
Silica	5µm	H1SI	HK-0221-SIL5

### Haisil 300 Guard Cartridges 20mm Length, 5/pk

Phase	Particle Size	3.2mm ID SS	2.1mm ID PEEK
C18	5µm	H318	HK-0221-W185
C8	5µm	H308	HK-0221-W085
C4	5µm	H304	HK-0221-W045

### Guard Cartridge Holder Kits

Cat. No.	Description
HK-GUARD-FM	Direct-Connect (female/male)
WK-GUARD-FM	Direct-Connect for Waters columns
HK-GUARD-FF	Symmetrical Connection (female/female)



HK-GUARD-FM



HK-GUARD-FF

## Haisil Preparative HPLC Columns

### 5µm Haisil 100 Semi-Prep HPLC Columns

Phase	Column ID	150mm	250mm
C18	10.0mm	HS-1510-M185	HS-2510-M185
C8	10.0mm	HS-1510-M085	HS-2510-M085
Silica	10.0mm	HS-1510-SIL5	HS-2510-SIL5

### 5µm Haisil 100 Preparative HPLC Columns

C18	20.0mm	HS-1520-M185	HS-2520-M185
C8	20.0mm	HS-1520-M085	HS-2520-M085
Silica	20.0mm	HS-1520-SIL5	HS-2520-SIL5

### 5µm Haisil 300 Semi-Prep HPLC Columns

C18	10.0mm	HS-1510-W185	HS-2510-W185
C8	10.0mm	HS-1510-W085	HS-2510-W085
C4	10.0mm	HS-1510-W045	HS-2510-W045

### 5µm Haisil 300 Preparative HPLC Columns

C18	20.0mm	HS-1520-W185	HS-2520-W185
C8	20.0mm	HS-1520-W085	HS-2520-W085
C4	20.0mm	HS-1520-W045	HS-2520-W045

Other dimensions available, call Chrom Tech for pricing.

# Higgins Analytical Cartridge Column Systems



- Targa Specifications:
  - 120Å pore size
  - Carbon Loading:
    - C8 = 8%
    - C18 = 16%
  - Surface area: 330m<sup>2</sup>/g
  - LC/MS without TFA!

## Targa Cartridge Columns

Phase	Column ID	40mm (2/pk)	50mm (2/pk)	100mm (each)
<b>C18, 5µm, SS</b>	4.6mm	TF-0446-C185	TF-0546-C185	TF-1046-C185
	3.2mm	TF-0432-C185	TF-0532-C185	TF-1032-C185
<b>C8, 5µm, SS</b>	4.6mm	TF-0446-C085	TF-0546-C085	TF-1046-C085
	3.2mm	TF-0432-C085	TF-0532-C085	TF-1032-C085
<b>C18, 5µm, PEEK</b>	2.1mm	TK-0421-C185	TK-0521-C185	
<b>C18, 3µm, PEEK</b>	2.1mm	TK-0421-C183	TK-0521-C183	
<b>C8, 5µm PEEK</b>	2.1mm	TK-0421-C085	TK-0521-C085	

## Clipeus Cartridge Columns

Phase	Column ID	40mm (2/pk)	50mm (2/pk)	100mm (each)
<b>C18, 5µm, SS</b>	4.6mm	CF-0446-C185	CF-0546-C185	CF-1046-C185
	3.2mm	CF-0432-C185	CF-0532-C185	CF-1032-C185
<b>C8, 5µm, SS</b>	4.6mm	CF-0446-C085	CF-0546-C085	CF-1046-C085
	3.2mm	CF-0432-C085	CF-0532-C085	CF-1032-C085
<b>Cyano, 5µm, SS</b>	4.6mm	CF-0446-CNP5	CF-0546-CNP5	CF-1046-CNP5
	3.2mm	CF-0432-CNP5	CF-0532-CNP5	CF-1032-CNP5
<b>Phenyl, 5µm, SS</b>	4.6mm	CF-0446-PHN5	CF-0546-PHN5	CF-1046-PHN5
	3.2mm	CF-0432-PHN5	CF-0532-PHN5	CF-1032-PHN5
<b>C18, 5µm, PEEK</b>	2.1mm	CK-0421-C185	CK-0521-C185	
<b>C8, 5µm, PEEK</b>	2.1mm	CK-0421-C085	CK-0521-C085	
<b>Cyano, 5µm, PEEK</b>	2.1mm	CK-0421-CNP5	CK-0521-CNP5	
<b>Phenyl, 5µm, PEEK</b>	2.1mm	CK-0421-PHN5	CK-0521-PHN5	



- Clipeus Specifications:
  - 120Å pore size
  - Carbon Loading:
    - C18 = 18%
  - Surface area: 330m<sup>2</sup>/g

## Higgins Analytical Haisil HL Cartridge Columns

Phase	Column ID	40mm (2/pk)	50mm (2/pk)	100mm (each)
<b>C18, 5µm, SS</b>	4.6mm	LF-0446-C185	LF-0546-C185	LF-1046-C185
	3.2mm	LF-0432-C185	LF-0532-C185	LF-1032-C185
<b>C18, 3µm, SS</b>	4.6mm	LF-0446-C183	LF-0546-C183	LF-1046-C183
	3.2mm	LF-0432-C183	LF-0532-C183	LF-1032-C183
<b>C18, 5µm, PEEK</b>	2.1mm	LK-0421-C185	LK-0521-C185	



- Haisil HL Specifications:
  - 100Å pore size
  - Carbon Loading:
    - C18 = 18%
  - Surface area: 300m<sup>2</sup>/g

## Cartridge Holder Ordering Information

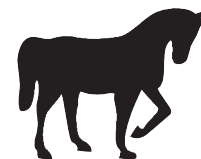
Cartridge Holder Fits Cartridges:	40mm	50mm	100mm
2.1, 3.2, and 4.6mm ID	HK-HOLD-40	HK-HOLD-50	HK-HOLD-100



# Higgins Analytical Cartridge Column Systems

## Haisil 100 Cartridge Columns

Phase	Column ID	40mm (2/pk)	50mm (2/pk)	100mm (each)
<b>C18, 5µm, SS</b>	4.6mm	HF-0446-M185	HF-0546-M185	HF-1046-M185
	3.2mm	HF-0432-M185	HF-0532-M185	HF-1032-M185
<b>C8, 5µm, SS</b>	4.6mm	HF-0446-M085	HF-0546-M085	HF-1046-M085
	3.2mm	HF-0432-M085	HF-0532-M085	HF-1032-M085
<b>Silica, 5µm, SS</b>	4.6mm	HF-0446-SIL5	HF-0546-SIL5	HF-1046-SIL5
	3.2mm	HF-0432-SIL5	HF-0532-SIL5	HF-1032-SIL5
<b>C18, 5µm, PEEK</b>	2.1mm	HK-0421-M185	HK-0521-M185	
<b>C8, 5µm, PEEK</b>	2.1mm	HK-0421-M085	HK-0521-M085	
<b>Silica, 5µm, PEEK</b>	2.1mm	HK-0421-SIL5	HK-0521-SIL5	



- **Haisil 100 Specifications:**
  - 100Å pore size
  - Carbon loading:
    - C8 = 7%
    - C18 = 12%
  - Surface area: 190m<sup>2</sup>/g

## Haisil 300 Cartridge Columns

Phase	Column ID	40mm (2/pk)	50mm (2/pk)	100mm (each)
<b>C18, 5µm, SS</b>	4.6mm	HF-0446-W185	HF-0546-W185	HF-1046-W185
	3.2mm	HF-0432-W185	HF-0532-W185	HF-1032-W185
<b>C8, 5µm, SS</b>	4.6mm	HF-0446-W085	HF-0546-W085	HF-1046-W085
	3.2mm	HF-0432-W085	HF-0532-W085	HF-1032-W085
<b>C4, 5µm, SS</b>	4.6mm	HF-0446-W045	HF-0546-W045	HF-1046-W045
	3.2mm	HF-0432-W045	HF-0532-W045	HF-1032-W045
<b>C18, 5µm, PEEK</b>	2.1mm	HK-0421-W185	HK-0521-W185	
<b>C8, 5µm, PEEK</b>	2.1mm	HK-0421-W085	HK-0521-W085	
<b>C4, 5µm, PEEK</b>	2.1mm	HK-0421-W045	HK-0521-W045	



- **Haisil 300 Specifications:**
  - 300Å pore size
  - Carbon loading:
    - C4 = 3%
    - C8 = 4%
    - C18 = 6%
  - Surface area: 80m<sup>2</sup>/g

## Cartridge Holder Ordering Information

Cartridge Holder Fits Cartridges:	40mm	50mm	100mm
<b>2.1, 3.2, and 4.6mm ID</b>	HK-HOLD-40	HK-HOLD-50	HK-HOLD-100



## NEW! Higgins Analytical Phalanx™ HPLC Columns

- Ultra high density end capping
- 100Å pore size
- Carbon Loading: C18 = 18%
- Surface area: 430m<sup>2</sup>/g
- End Capping: Proprietary and extremely exhaustive

### Unique Features:

- Ideal for basic or acidic analytes
- Wide pH range stability
- High capacity
- No secondary Si-OH interaction
- No metal contamination
- Extreme hydrophobicity range



### Phalanx™ Piccolo Short Microbore/Trap HPLC Columns

Cat. No.	Description
PP-0101-C185	C18 Haisil HL, 1.0mm ID x 10mm
PP-M501-C185	C18 Haisil HL, 1.0mm ID x 5mm
PP-M2M5-C185	C18 Haisil HL, 0.5mm ID x 2.5mm

### Phalanx™ Direct Connect Sprite™ Ordering Information

PR-0421-C185	C18 Haisil HL, 2.1mm ID x 40mm
PR-0221-C185	C18 Haisil HL, 2.1mm ID x 20mm
PR-0121-C185	C18 Haisil HL, 2.1mm ID x 10mm

### NEW Columns!

Analytical, Microbore, and Preparative columns also available. Please check our website [www.chromtech.com](http://www.chromtech.com) for a complete listing or call Chrom Tech customer service.