



HAISIL™ 100

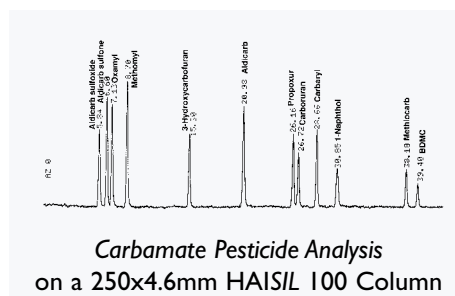
## HAISIL 100 - The Workhorse

Phases	Silica, C8, and C18
Particle Sizes	3µm and 5µm
Pore Size	100Å
Pore Volume	0.5mL/gm
Surface Area	190m <sup>2</sup> /gm
%Carbon	C8 = 7%(w/w), C18 = 12%(w/w)
Phase type	Monofunctional & fully endcapped
Silica Class	Type A
Hardware	Stainless steel and PEEK columns and cartridges:
	Nanobore columns <span style="float: right;">Page 12</span>
	Microbore columns <span style="float: right;">Page 12</span>
	Analytical and Narrowbore columns <span style="float: right;">Page 13</span>
	Semi-Prep and Prep Columns <span style="float: right;">Page 13</span>
	Cartridge columns - Analytical <span style="float: right;">Page 14</span>
	Cartridge Columns - LC/MS <span style="float: right;">Page 14</span>
	High Speed 10mm Semi-Prep cartridges <span style="float: right;">Page 15</span>
	Prep Guard Cartridges <span style="float: right;">Page 15</span>
	Analytical Guard Cartridges <span style="float: right;">Page 15</span>
	Narrowbore guards and LC/MS Cartridges <span style="float: right;">Page 15</span>

**Applications** HAISIL 100 columns and cartridges 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. In formats ranging from 0.17 to 20mm ID and from 20 to 250mm in length, HAISIL 100 is the sorbent we use to drive our competition crazy whenever challenged to an efficiency bake-off.

## HAISIL 100 - the Separations Work Horse

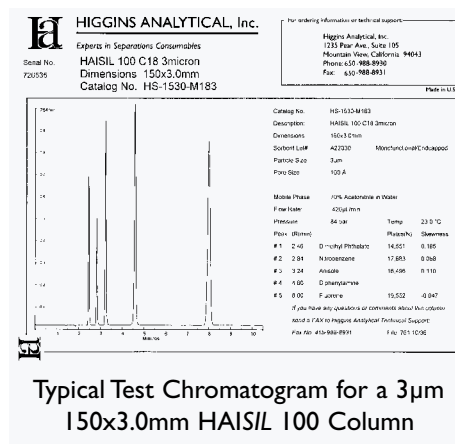
The 100Å pore size, monomeric bonded phase, and very high performance make HAISIL 100 an ideal choice for separations ranging from small molecules such as carbamate pesticides and pharmaceuti-



cal drugs to synthetic oligonucleotides and small peptides. High efficiency, symmetrical peaks, and long column life is characteristic not only of the C8 and C18 reverse phase columns, but the normal phase silica columns as well.

250x4.6mm HAISIL 100 5µm columns routinely produce around 100,000 plates/meter in our QC lab. Note that our column efficiencies are calculated by statistical moments - not an approximate peak-width method! While this performance is more than adequate for most requirements, HAISIL 100 3µm is also available.

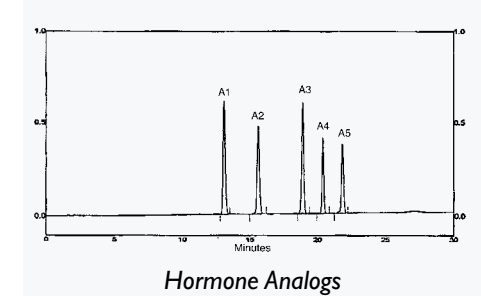
The typical test chromatogram on the *Certificate of Analysis* pictured below illustrates that HAISIL 100 C18 3µm



columns have the same near theoretical reduced plate height and perfect symmetry that is characteristic of their 5µm counterparts.

## Hormone Analogs

LH-RH (Luteinizing Hormone - Releasing Hormone) Analogs are used for the inhibition of gonadal steroid production. An important application area is in the treatment of prostate cancer.

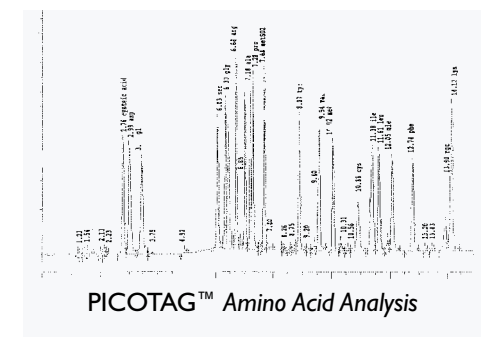


Conditions  
HAISIL 100 C18 5µm 150x4.6mm  
Solvent A: Phosphoric acid, ammonium sulfate aqueous buffer  
Solvent B: Acetonitrile.  
Linear gradient at 1mL/min  
254nm detection

Analogs:  
A1: pGlu-His-Trp-Ser-Tyr-(d-Ser(bu<sup>5</sup>))-Leu-Arg-Pro-NHEt  
A2: pGlu-His-Trp-Ser-Tyr-d-Ala-Leu-Arg-Pro-NHEt  
A3: pGlu-His-Trp-Ser-Tyr-d-Leu-Leu-Arg-Pro-NHEt  
A4: pGlu-His-Trp-Ser-Tyr-d-Ala-Trp-Leu-Pro-NHEt  
A5: pGlu-His-Trp-Ser-Tyr-d-Trp-Leu-Arg-Pro-NHEt

## Economical Alternative for PICO-TAG Analysis

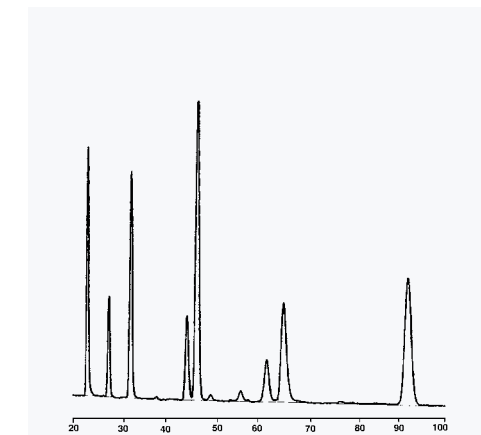
Our HAISIL 100 C18 columns have demonstrated superior resolution and life time for PICOTAG™ amino acid analysis when compared to considerably more expensive columns from other manufacturers. Besides good linearity and column



lifetime, the 150x4.6mm column yields very efficient amino acid analysis as shown in the chromatogram above (P/N HS-1546-M185).

## Alkaloids

A Peruvian vine named "Una de Gato" (*Uncaria tomentosa*) and commonly referred to as Cat's Claw, has become a popular natural product source for herbal remedies. Enthusiasts claim the oxindole alkaloid extracts to be effective in the treatment of a wide range of digestive and circulatory diseases as well as other afflictions ranging from cancer to arthri-



tis. Reputable providers of such phytochemical containing formulations carefully assay the alkaloid content of the extracts and formulations. The chromatogram above illustrates baseline resolution of Cat's Claw bark extracts containing isopteropodine, pteropodine, mitraphylline, isomitraphylline, ryncophylline and isorynchophylline.

## Why do HPLC columns plug up?

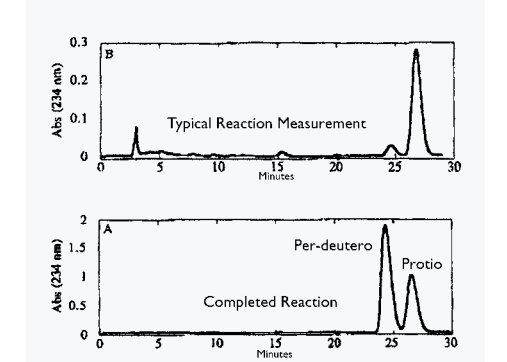
A large percentage of HPLC columns die because the back pressure builds up. Most chromatographers (and many column manufacturers) believe this is because the inlet frit plugs up with particles. Actually, it is usually the packed bed that becomes plugged by smaller than 1µm particles that pass through in-line filters and the 2µm inlet frit. See pages 34 - 39 for the numerous

## Kinetic Measurements in Disease Research

Researchers at the University of California, Santa Cruz have recently published a novel HPLC method that yields baseline separation of per-deuterated and protonated lipoxygenases.

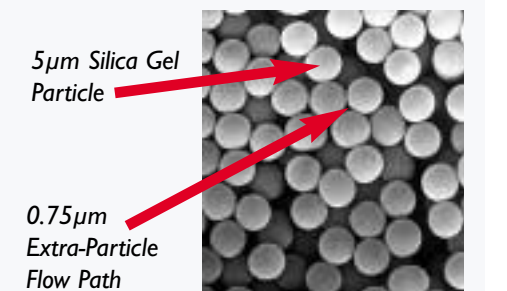
The striking ability of a 250x4.6mm HAISIL 100 C18 column to resolve these two very similar compounds is enabling researchers to study large competitive kinetic isotope effects in Human 15-lipoxygenase catalysis. Proton/per-deutero ratio data obtained by this HPLC method agreed within experimental error of data obtained by ES-MS.

The elucidation of these mechanisms is noteworthy because of the increasing role human lipoxygenases are playing in inflammatory diseases and cancer growth regulation.



HAISIL 100 C18 250x4.6mm  
74.9% MeOH, 25% water, 0.1%HoAC  
1mL/min, 234nm  
P/N HS-2546-M185

options Higgins Analytical provides for eliminating this common problem.



## Capillary Columns

<b>HAISIL 100 Silica 5µm</b> 30x0.15mm HC-0315-SIL5	<b>150µm I.D.</b> 50x0.15mm HC-0515-SIL5	100x0.15mm HC-1015-SIL5
<b>HAISIL 100 C8 5µm</b> 30x0.15mm HC-0315-M085	<b>150µm I.D.</b> 50x0.15mm HC-0515-M085	100x0.15mm HC-1015-M085
<b>HAISIL 100 C18 3µm</b> 30x0.15mm HC-0315-M183	<b>150µm I.D.</b> 50x0.15mm HC-0515-M183	100x0.15mm HC-1015-M183
<b>HAISIL 100 C18 5µm</b> 30x0.15mm HC-0315-M18	<b>150µm I.D.</b> 50x0.15mm HC-0515-M185	100x0.15mm HC-1015-M185

## Microbore Columns

<b>HAISIL 100 Silica 5µm</b> 30x1.0mm HS-0301-SIL5	<b>1.0mm - 0.5mm - 0.3mm I.D.</b> 50x1.0mm HS-0501-SIL5	100x1.0mm HS-1001-SIL5	150x1.0mm HS-1501-SIL5	250x1.0mm HS-2501-SIL5
30x0.5mm HS-03M5-SIL5	50x0.5mm HS-05M5-SIL5	100x0.5mm HS-10M5-SIL5	150x0.5mm HS-15M5-SIL5	250x0.5mm HS-25M5-SIL5
30x0.3mm HS-03M3-SIL5	50x0.3mm HS-05M3-SIL5	100x0.3mm HS-10M3-SIL5		
<b>HAISIL 100 C8 5µm</b> 30x1.0mm HS-0301-M085	<b>1.0mm - 0.5mm - 0.3mm I.D.</b> 50x1.0mm HS-0501-M085	100x1.0mm HS-1001-M085	150x1.0mm HS-1501-M085	250x1.0mm HS-2501-M085
30x0.5mm HS-03M5-M085	50x0.5mm HS-05M5-M085	100x0.5mm HS-10M5-M085	150x0.5mm HS-15M5-M085	250x0.5mm HS-25M5-M085
30x0.3mm HS-03M3-M085	50x0.3mm HS-05M3-M085	100x0.3mm HS-10M3-M085		
<b>HAISIL 100 C18 3µm</b> 30x1.0mm HS-0301-M183	<b>1.0mm - 0.5mm - 0.3mm I.D.</b> 50x1.0mm HS-0501-M183	100x1.0mm HS-1001-M183	150x1.0mm HS-1501-M183	250x1.0mm HS-2501-M183
30x0.5mm HS-03M5-M183	50x0.5mm HS-05M5-M183	100x0.5mm HS-10M5-M183	150x0.5mm HS-15M5-M183	250x0.5mm HS-25M5-M183
30x0.3mm HS-03M3-M183	50x0.3mm HS-05M3-M183	100x0.3mm HS-10M3-M183		
<b>HAISIL 100 C18 5µm</b> 30x1.0mm HS-0301-M185	<b>1.0mm - 0.5mm - 0.3mm I.D.</b> 50x1.0mm HS-0501-M185	100x1.0mm HS-1001-M185	150x1.0mm HS-1501-M185	250x1.0mm HS-2501-M185
30x0.5mm HS-03M5-M185	50x0.5mm HS-05M5-M185	100x0.5mm HS-10M5-M185	150x0.5mm HS-15M5-M185	250x0.5mm HS-25M5-M185
30x0.3mm HS-03M3-M185	50x0.3mm HS-05M3-M185	100x0.3mm HS-10M3-M185		

## Analytical Columns - Stainless Steel

<b>HAISIL 100 Silica 5µm</b> 30x4.6mm HS-0346-SIL5	<b>4.6, 3.0, and 2.1mm I.D. s.s. columns</b> 50x4.6mm HS-0546-SIL5	100x4.6mm HS-1046-SIL5	150x4.6mm HS-1546-SIL5	250x4.6mm HS-2546-SIL5
30x3.0mm HS-0330-SIL5	50x3.0mm HS-0530-SIL5	100x3.0mm HS-1030-SIL5	150x3.0mm HS-1530-SIL5	250x3.0mm HS-2530-SIL5
30x2.1mm HS-0321-SIL5	50x2.1mm HS-0521-SIL5	100x2.1mm HS-1021-SIL5	150x2.1mm HS-1521-SIL5	250x2.1mm HS-2521-SIL5

<b>HAISIL 100 C8 5µm</b> 30x4.6mm HS-0346-M085	<b>4.6, 3.0, and 2.1mm I.D. s.s. columns</b> 50x4.6mm HS-0546-M085	100x4.6mm HS-1046-M085	150x4.6mm HS-1546-M085	250x4.6mm HS-2546-M085
30x3.0mm HS-0330-M085	50x3.0mm HS-0530-M085	100x3.0mm HS-1030-M085	150x3.0mm HS-1530-M085	250x3.0mm HS-2530-M085
30x2.1mm HS-0321-M085	50x2.1mm HS-0521-M085	100x2.1mm HS-1021-M085	150x2.1mm HS-1521-M085	250x2.1mm HS-2521-M085

<b>HAISIL 100 C18 3µm</b> 30x4.6mm HS-0346-M183	<b>4.6, 3.0, and 2.1mm I.D. s.s. columns • 3µm SERIES</b> 50x4.6mm HS-0546-M183	100x4.6mm HS-1046-M183	150x4.6mm HS-1546-M183	250x4.6mm HS-2546-M183
30x3.0mm HS-0330-M183	50x3.0mm HS-0530-M183	100x3.0mm HS-1030-M183	150x3.0mm HS-1530-M183	250x3.0mm HS-2530-M183
30x2.1mm HS-0321-M183	50x2.1mm HS-0521-M183	100x2.1mm HS-1021-M183	150x2.1mm HS-1521-M183	250x2.1mm HS-2521-M183

<b>HAISIL 100 C18 5µm</b> 30x4.6mm HS-0346-M185	<b>4.6, 3.0, and 2.1mm I.D. s.s. columns</b> 50x4.6mm HS-0546-M185	100x4.6mm HS-1046-M185	150x4.6mm HS-1546-M185	250x4.6mm HS-2546-M185
30x3.0mm HS-0330-M185	50x3.0mm HS-0530-M185	100x3.0mm HS-1030-M185	150x3.0mm HS-1530-M185	250x3.0mm HS-2530-M185
30x2.1mm HS-0321-M185	50x2.1mm HS-0521-M185	100x2.1mm HS-1021-M185	150x2.1mm HS-1521-M185	250x2.1mm HS-2521-M185

## Semi-Prep and Prep Columns

<b>HAISIL 100 Silica 5µm</b> 50x10mm HS-0510-SIL5	<b>10mm &amp; 20mm I.D. Stainless Steel Semi-Prep and Prep Columns</b> 100x10mm HS-1010-SIL5	150x10mm HS-1510-SIL5	250x10mm HS-2510-SIL5
50x20mm HS-0520-SIL5	100x20mm HS-1020-SIL5	150x20mm HS-1520-SIL5	250x20mm HS-2520-SIL5

<b>HAISIL 100 C8 5µm</b> 50x10mm HS-0510-M085	<b>10mm &amp; 20mm I.D. Stainless Steel Semi-Prep and Prep Columns</b> 100x10mm HS-1010-M085	150x10mm HS-1510-M085	250x10mm HS-2510-M085
50x20mm HS-0520-M085	100x20mm HS-1020-M085	150x20mm HS-1520-M085	250x20mm HS-2520-M085

<b>HAISIL 100 C18 5µm</b> 50x10mm HS-0510-M185	<b>10mm &amp; 20mm I.D. Stainless Steel Semi-Prep and Prep Columns</b> 100x10mm HS-1010-M185	150x10mm HS-1510-M185	250x10mm HS-2510-M185
50x20mm HS-0520-M185	100x20mm HS-1020-M185	150x20mm HS-1520-M185	250x20mm HS-2520-M185



**HAISpeed20 - 20mm I.D. Prep Guard Cartridges**

**HAISIL 100 Silica 10µm 20mm I.D. s.s. Prep Guard Cartridges**  
 25x20mm 2/pkg  
 HF-0220-SIL1

**HAISIL 100 C18 10µm 20mm I.D. s.s. Prep Guard Cartridges**  
 25x20mm 2/pkg  
 HF-0220-M181



**HAICART GUARDS - S.S. Guard Cartridges**

**HAISIL 100 Silica 5µm 3.2mm I.D. s.s. Guard Cartridges**  
 20x3.2mm 5/pkg  
 H1S1



**HAISIL 100 C8 5µm 3.2mm I.D. s.s. Guard Cartridges**  
 20x3.2mm 5/pkg  
 H108

**HAISIL 100 C18 5µm 3.2mm I.D. s.s. Guard Cartridges**  
 20x3.2mm 5/pkg  
 H118

**HAIPEEK GUARDS - PEEK Guard Cartridges**

**HAISIL 100 Silica 5µm 2.1mm I.D. PEEK Cartridges**  
 20x2.1mm 5/pkg  
 HK-0221-SIL5



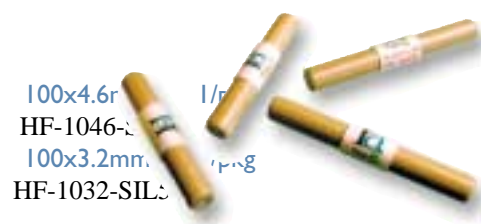
**HAISIL 100 C8 5µm 2.1mm I.D. PEEK Cartridges**  
 20x2.1mm 5/pkg  
 HK-0221-M085

**HAISIL 100 C18 5µm 2.1mm I.D. PEEK Guard Cartridges**  
 20x2.1mm 5/pkg

*HK-GUARD, HK-HOLD, 10-HOLD and 20-HOLD holders required for these cartridge columns.*

**HAICART - Stainless Steel Analytical Cartridge Columns**

**HAISIL 100 Silica 5µm 4.6 - 3.2mm I.D. s.s. Analytical Cartridges**  
 40x4.6mm 2/pkg 50x4.6mm 2/pkg 100x4.6mm 1/pkg  
 HF-0446-SIL5 HF-0546-SIL5 HF-1046-SIL5  
 40x3.2mm 2/pkg 50x3.2mm 2/pkg 100x3.2mm 1/pkg  
 HF-0432-SIL5 HF-0532-SIL5 HF-1032-SIL5



**HAISIL 100 C8 5µm 4.6 - 3.2mm I.D. s.s. Analytical Cartridges**  
 40x4.6mm 2/pkg 50x4.6mm 2/pkg 100x4.6mm 1/pkg  
 HF-0446-M085 HF-0546-M085 HF-1046-M085  
 40x3.2mm 2/pkg 50x3.2mm 2/pkg 100x3.2mm 1/pkg  
 HF-0432-M085 HF-0532-M085 HF-1032-M085

**HAISIL 100 C18 5µm 4.6 - 3.2mm I.D. s.s. Analytical Cartridges**  
 40x4.6mm 2/pkg 50x4.6mm 2/pkg 100x4.6mm 1/pkg  
 HF-0446-M185 HF-0546-M185 HF-1046-M185  
 40x3.2mm 2/pkg 50x3.2mm 2/pkg 100x3.2mm 1/pkg  
 HF-0432-M185 HF-0532-M185 HF-1032-M185



**HAIPEEK - PEEK Analytical Cartridge Columns**

**HAISIL 100 Silica 5µm 2.1mm I.D. PEEK Analytical Cartridges**  
 40x2.1mm 2/pkg 50x2.1mm 2/pkg  
 HK-0421-SIL5 HK-0521-SIL5

**HAISIL 100 C8 5µm 2.1mm I.D. PEEK HAIPEEK Analytical Cartridges**  
 40x2.1mm 2/pkg 50x2.1mm 2/pkg  
 HK-0421-M085 HK-0521-M085

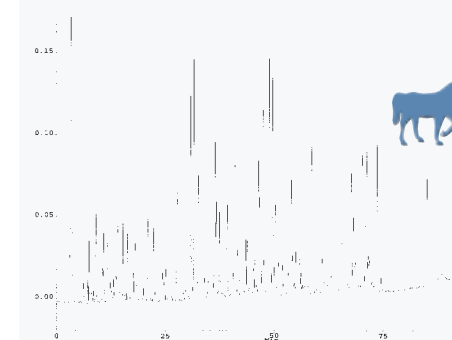
**HAISIL 100 C18 5µm 2.1mm I.D. PEEK HAIPEEK Analytical Cartridges**  
 40x2.1mm 2/pkg 50x2.1mm 2/pkg  
 HK-0421-M185 HK-0521-M185

HAICART (stainless steel) and HAIPEEK (PEEK) guard cartridges are compatible with Higgins Analytical HAIPEEK Guard Holders and the PE Brownlee NewGuard™ Holder.

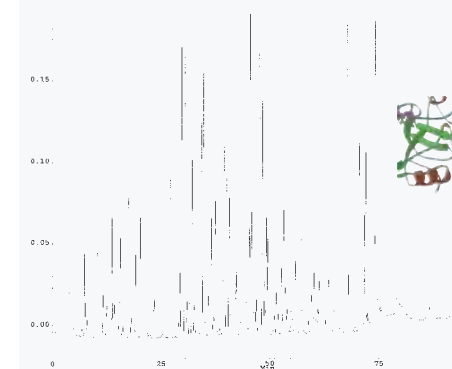


**100Å vs. 300Å Columns for Peptide Mapping**

The question of whether to use a 100Å or 300Å column for mapping usually divides peptide chromatographers into two groups. Rather than take sides, we have chosen to offer very efficient columns with both pore diameters to suit both camp's preferences. HAISIL 100 and HAISIL 300 columns are available in 20 to 250mm lengths and 0.15mm to 20mm internal diameters.



Tryptic Map of Transferrin on HAISIL 100 250x4.6mm P/N HS-2546-M185



Tryptic Map of Transferrin on HAISIL 300 250x2.1mm P/N HS-2521-W185



### We Violate the 80:20 Rule

This catalog contains hundreds of parts and it would probably be no surprise to you if we pointed out that only about 20% of them are manufactured 80% of the time. But what you would not know is that another 20% of the products we manufacture are not even listed in this catalog!

We stock tubing with a wide variety of internal diameters, and since we machine the columns and cartridges ourselves, custom length and I.D. columns are almost as easy for us to provide as are the standard sizes listed in this catalog. Since our part numbering system has an easy to understand pattern, customers routinely compose and order custom configurations.

### Easy to Understand Part Numbers

Except for HAICART Guard Cartridges, all Higgins Analytical HPLC column product part numbers are based on a 2-4-4 character pattern. While we will not manufacture every combination and permutation devisable with this scheme, this page will serve as a guide to assist you in defining a product that you believe would better address your needs than one of the hundreds of formats we routinely manufacture.

The two character prefix indicates *sorbent and hardware type*. Standard configurations are **highlighted**.

#### Prefix Character 1 (Sorbent)

**X**-XXXX-XXXX  
**C** = CLYPEUS  
**H** = HAISIL 100 or HAISIL 300  
**K** = Kromasil  
**L** = HAISIL HL  
**T** = TARGA

#### Prefix Character 2 (Hardware)

**X**-XXXX-XXXX  
**S** = Stainless steel HPLC Column  
**P** = PEEK HPLC column  
**F** = Stainless steel cartridge column  
**K** = PEEK cartridge column  
**N** = Nano Scale column ( 150µm)

The four center characters indicate the column or cartridge *length (cm) and internal diameter (mm)*.

#### Center Characters 1 and 2 (Length)

XX-**■**XX-XXX  
**03** = 3cm      **04** = 4cm  
**05** = 5cm      **07** = 7.5cm  
**10** = 10cm     **12** = 12.5cm  
**15** = 15cm     **20** = 20cm  
**22** = 22cm     **25** = 25cm  
**30** = 30cm     **50** = 50cm

#### Center Characters 3 and 4 (I.D.)

XX-XX-**■**■-XXXX  
**15** = 150µm    **M3** = 300µm  
**M5** = 500µm    **M8** = 800µm  
**01** = 1.0mm    **21** = 2.1mm  
**30** = 3.0mm    **32** = 3.2mm  
**40** = 4.0mm    **46** = 4.6mm  
**10** = 10mm     **20** = 20mm

The four character suffix indicates *sorbent chemistry and particle size*.

#### Suffix Characters 1 to 3 (Phase)

XX-XXXX-**■**■**■**X  
**C04** = Butyl or C4  
**C08** = Octyl or C8  
**C18** = ODS or C18  
**CNP** = Cyano or Nitrile  
**M08** = HAISIL 100 C8  
**M18** = HAISIL 100 C18  
**NH2** = Amino  
**PHN** = Phenyl  
**SIL** = Silica Gel  
**W04** = 300Å C4  
**W08** = 300Å C8  
**W18** = 300Å C18

#### Suffix Character 4 (Particle Size)

XX-XXXX-XXX**■**  
**1** = 10µm  
**2** = 10 - 15µm  
**3** = 3 or 3.5µm  
**5** = 4.5 or 5µm  
**7** = 15 - 20µm

### Custom HPLC Columns

Let us or The Nest Group, Inc. know if you have particular needs or are interested in formats or chemistries not listed in this catalog. Higgins Analytical is continuously developing new products and would be interested in discussing your individual requirements.

We are also able to pack your own sorbents into analytical or semiprep columns enabling you to conduct selectivity tests and separation optimization work before you commit your sample to very large scale columns packed with the same material.

### Higgins is grateful to the following individuals for permission to share their data in this catalog:

Jane Cooper, Lilly Research, Erl Wood Manor, Windlesham, Surrey UK  
*In Vivo Microdialysis Samples from Rat Hypothalamus*. Page 27

Larry David, Oregon Health Sciences University, School of Dentistry, Portland, OR  
*Human Ocular Lens Protein (Beta A1 Crystallin and Gamma S Crystallin) Analysis by LC/MS*. Page 29

Chris Gong and Chulani Karunatilake, Genentech, Inc., South San Francisco, CA  
*Fast Peptide map of rhGH on a 5cm column*. Page 17

Elizabeth Harris, Emisphere Technologies, Inc., Hawthorne, NY  
*Fast Analysis a Drug Delivery System*. Page 17

David Hawke, Perseptive Biosystems, Western Technical Center, South San Francisco, CA  
*Fast Tryptic Map of Cytochrome-C*. Page 17

Ted Holman, University of California, Santa Cruz, CA  
*Large Competitive Kinetic Isotope Effects in Human 15-Lipoxygenase Catalysis Measured by a Novel HPLC Method*. Page 11

David Isom, Analytical Sales and Service, Pompton Plains, NJ  
*Fat-Soluble Vitamin Assay*. Page 27  
*Antibacterials*. Page 27  
*Antihypertensives*. Page 29

Krishna Kalghatgi, NeoGenesis, Cambridge, MA  
*RPC of Basic Compounds in Combinatorial Mixtures*. Page 23

Kamlesh Patel, University of North Carolina, Department of Chemistry, Charlottesville, VA  
*Analysis of Basic Peptides and Peptide Mapping without TFA*. Page 27

Mark Ross, Argonex, Inc., Charlottesville, VA  
*Micropreparative Chromatography and Reanalysis of Peptides from Tumor Cells*. Page 17

Steve Sharp, Roche Products, Welwyn Garden City, UK  
*LC/MS of Serum Samples*. Page 23

Lorne Vandermark, Pharmco, Titusville, FL  
*Analysis of Cat's Claw Extract*. Page 11

### Expert and Responsive Technical Support

As a Higgins Analytical Customer seeking technical support or product information, you will eliminate long waits and expensive phone calls, and you will never be transferred from one person to another only to end up in someone's phone mail! By simply faxing (1-508-485-5736) or e-mailing (sales@nestgrp.com) your question to The Nest Group's **Technical Support**, you will receive a prompt written response. If we don't know the answer, they will tell you so – but, that doesn't happen very often. Additional up-to-date product and application information can be found by pointing your browser at <http://www.higanalyt.com> or <http://www.nestgrp.com>

### Easy Ordering and Rapid Delivery

Our worldwide network of qualified distributors can provide expert support and prompt delivery from their local inventory. Our catalog-listed items are generally shipped from the factory within a day of receiving the order. In the event that we have not provided you with a near by distributor, we can ship an order to you directly from the factory by a variety of carriers.

In order to further simplify the process for you and your purchasing department, The Nest Group, one of our many distributors accepts credit card orders.



Payment terms for all other orders are net 30 days from date of invoice.

### Product Availability

Higgins Analytical products are available worldwide through a network of responsive distributors. These organizations can provide qualified technical support and prompt product delivery. The Nest Group, Inc. 508-481-6223 or 800-347-6378 is an excellent distributor (U.S & Canada), that offers excellent technical support as well as inventory of our products. E-mail them at [info@nestgrp.com](mailto:info@nestgrp.com) or use [www.nestgrp.com](http://www.nestgrp.com)



HIGGINS ANALYTICAL PRODUCTS MAY BE PURCHASED AND ARE SOLD ONLY ON THE FOLLOWING WARRANTY TERMS AND CONDITIONS. ADDITIONAL OR DIFFERENT TERMS, WHETHER IN AN ORDER, ACKNOWLEDGMENT, INVOICE OR OTHER DOCUMENT, SHALL NOT BECOME PART OF OR VARY THE FOLLOWING TERMS UNLESS AGREED TO IN WRITING BY HIGGINS ANALYTICAL.

### LIMITED WARRANTY

Higgins Analytical products are manufactured and quality controlled to the highest industry standards, and Higgins Analytical warrants that the products, when properly applied in accordance with Higgins Analytical's standards therefore, will perform for a period of thirty (30) days after delivery substantially as described in Higgins Analytical's then current specifications for the product. If a customer believes a product does not comply with such warranty, the customer shall, within the warranty period, report the purported defect to Higgins Analytical and cooperate fully with Higgins Analytical in determining the conditions and cause of any purported defect and, thereby, obtain a returned goods authorization from Higgins Analytical or the place of purchase. If Higgins Analytical determines the alleged defect occurred as a result of misuse, neglect, improper installation, repair, alteration, application or accident, rapid depressurization, removal of column end fittings, unusual physical or electrical stress or improper handling procedure, the warranty shall be void and ineffective.

### EXPRESS LIMITATIONS

HIGGINS ANALYTICAL PRODUCTS ARE MANUFACTURED FOR USE IN RESEARCH IN CHEMICAL MANUFACTURING LABORATORIES ONLY AND ARE NOT INTENDED FOR USE IN CLINICAL OR DIAGNOSTIC APPLICATIONS. THE HAISPEED 10 AND HAISPEED 20 CARTRIDGE HOLDERS ARE RATED FOR USE UP TO 3,000 PSI (200BAR) WITH FLUIDS THAT ARE LIQUID AT STP (STANDARD TEMPERATURE AND PRESSURE) ONLY. SERIOUS BODILY INJURY OR DEATH MAY RESULT IF A HAISPEED HOLDER BROKE WHILE WORKING WITH SUPERCRITICAL FLUIDS.

### DISCLAIMER

EXCEPT AS EXPRESSLY PROVIDED, ALL WARRANTIES, CONDITIONS, REPRESENTATIONS, INDEMNITIES AND GUARANTEES, WHETHER EXPRESS OR IMPLIED, ARISING BY LAW, CUSTOM, PRIOR ORAL OR WRITTEN STATEMENTS BY HIGGINS ANALYTICAL OR OTHERWISE (INCLUDING, BUT NOT LIMITED TO, ANY WARRANTY FOR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE) ARE OVERRIDEN, EXCLUDED AND DISCLAIMED.

### EXCLUSIVE REMEDY

In the event a customer establishes a breach of the above warranty, customer's exclusive remedy against Higgins Analytical, and Higgins Analytical's sole liability, is, at its option, the replacement of the defective product or the refund of the purchase price therefor.

### NO CONSEQUENTIAL DAMAGES

HIGGINS ANALYTICAL SHALL NOT BE RESPONSIBLE FOR ANY CONSEQUENTIAL, INDIRECT, SPECIAL, PUNITIVE OR INCIDENTAL DAMAGES, WHETHER FORESEEABLE OR UNFORESEEABLE, INCLUDING, BUT NOT LIMITED TO, CLAIMS FOR LOSS OF GOODWILL, PROFITS, USE OF MONEY OR USE OF PRODUCTS, STOPPAGE OF OTHER WORK OR IMPAIRMENT OF OTHER ASSETS, ARISING OUT OF BREACH OF EXPRESS OR IMPLIED WARRANTY, BREACH OF CONTRACT, MISREPRESENTATION, NEGLIGENCE, STRICT LIABILITY IN TORT OR OTHERWISE, EXCEPT ONLY IN THE CASE OF PERSONAL INJURY WHERE AND TO THE EXTENT THAT APPLICABLE LAW REQUIRES SUCH LIABILITY.

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