



# HAISIL 300

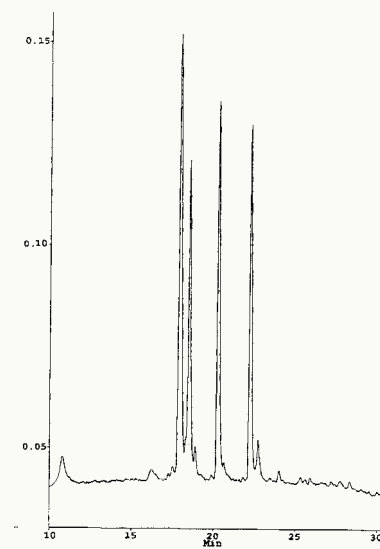
## HAISIL 300 - for Biomolecules

|                |   |
|----------------|---|
| Phases         | C4, C8, and C18                                 |
| Particle Sizes | 5 and 10µm                                      |
| Pore Size      | 300Å  |
| Pore Volume    | 0.7mL/gm  |
| Surface Area   | 80m <sup>2</sup> /gm                            |
| %Carbon (w/w)  | C4 = 3%, C8 = 4%, C18 = 6%                      |
| Phase type     | Monofunctional and fully endcapped              |
| Silica Class   | Type A  |
| Hardware       | Stainless steel and PEEK columns and cartridges |

**Applications** HAISIL 300 columns and cartridges 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. Short cartridge columns are economical and are ideally suited for LC/MS applications. The column and cartridge offering ranges from 150µm to 20mm I.D. which means that bioseparations can be optimized by selecting a format that best fits your analytical requirements.

**HAISIL 300 Wide Pore Columns**  
Higgins Analytical's HAISIL 300 C4, C8 and C18 columns are popular alternatives for biomolecule analysis where larger pore diameters often enhance separations. High efficiencies, long column life, and extremely symmetrical peaks are characteristics of HAISIL 300 columns that range in size of 20mm - 250mm in length.

**150µm - 20mm Internal Diameters**  
Higgins Analytical's reputation for manufacturing efficient and robust columns now ranges from 150µm to 20mm internal diameter. The sub 1mm ALGO™ Series, meaning "a sharp needle," appropriately describes the peaks obtained from Higgins Analytical's high performance microbore HPLC columns.

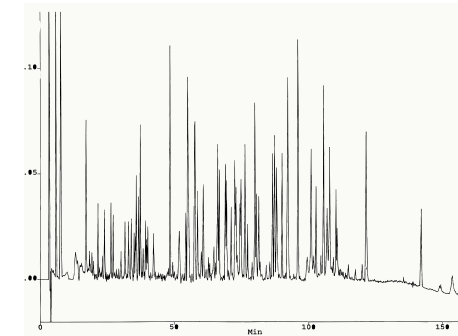


Peptide Standards separated on a 250x1.0mm column (HS-2501-W185) with an efficiency that permits collection of 10µL peaks

We're so confident about our ALGO Series HAISIL 300 C18 5µm performance, we challenge anyone to manufacture a better one.

Depending upon the type of information a protein chemist is seeking, the HPLC analysis of a complex digest can take 1 to 2 hours. The following chromatogram illustrates a high resolution tryptic digest map of BSA on a 250x2.1mm HAISIL

300 C18 5µm column indicates peak capacities in excess of 100. Small proteins, on the other hand can yield fewer

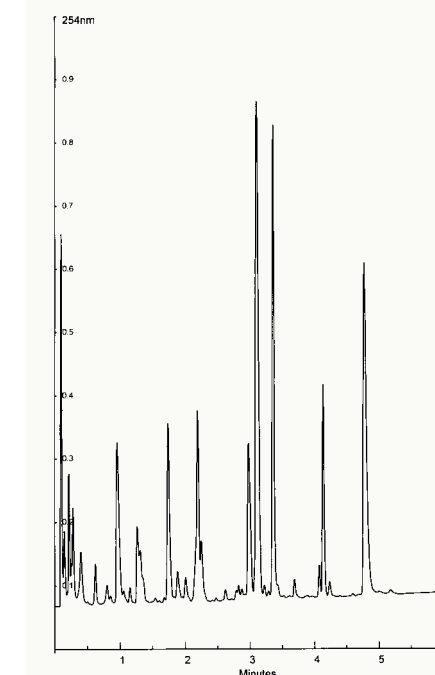


Tryptic Map of BSA on HAISIL 300 C18 5µm (250x4.6mm P/N HS-2546-W185)

fragments, and if only a "fingerprint" of a digest is required, high peak capacity columns can be a waste of time.

### Peptide Map in 5 minutes

The figure below illustrates a very fast peptide map of cytochrome-C. The informa-

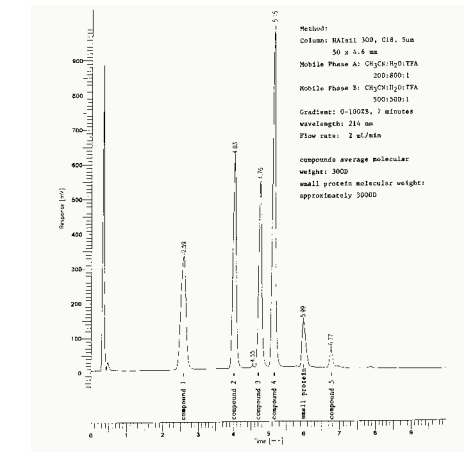


5min Tryptic Map of Cytochrome-C on a 5cm HAISIL 300 C18 column

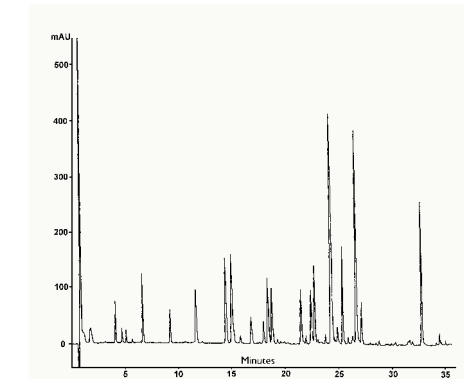
tion that can be gleaned from this five minute profile is more than adequate for many analytical requirements. The robust 50x4.6mm HAISIL 300 C18 column provides hundreds of runs without performance loss even under the aggressive 6ml/min flow conditions used in this example.

### Fast Analysis of a Complex Drug Delivery System

Most pharmaceutical QC laboratories are faced with rapidly increasing demands for high throughput capability. A good example of one laboratory's approach to addressing a large number of samples for analysis on a daily basis is summarized below. This novel drug delivery system



contains a small protein and other components that span an order of magnitude in molecular weight. All the compounds of interest were easily resolved in a single analysis with a fast linear gradient on a 5cm long HAISIL 300 C18 5µm column.



Fast Tryptic Map of rhGH 50x4.6mm HAISIL 300 C18

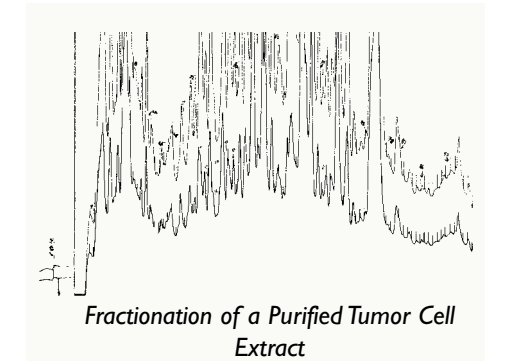
### Micro-Preparative HPLC

Higgins Analytical Cartridge Columns are helping researchers understand the immune response of living cells. An investigation to understand the genetic control of the immune response systems in organisms involves the extraction, isolation, and identification of more than

10,000 peptides. These distinct peptides are bound to a major histocompatibility complex (MHC) molecule on tumor cells.

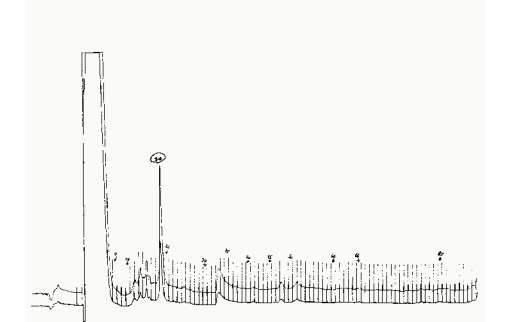
Extraction of approximately 5x10<sup>10</sup> cells yield several nanomoles of a very complex peptide mixture. Several rounds of RP-HPLC with different organic modifiers on a 40x2.1mm PEEK cartridge column (HAISIL 300 C18 5µm, P/N: HK-0421-W185) are performed to fractionate the mixture into individual components.

The chromatograms below illustrate how this technique is being used to narrow the search for the one peptide that marks a particular tumor cell as being diseased enabling it to be recognized by the immune cells.



Fractionation of a Purified Tumor Cell Extract

Peptides ranging from 100 fmol to 1 pmol are collected in 40sec intervals during a 70min gradient from 0 - 60% MeCN with HFBA modifier. A 40x2.1mm HAISIL 300 C18 5µm cartridge column (HK-0421-W185) is used.



Reanalysis of a Fraction from the Chromatogram above

The same 40x2.1mm HAISIL 300 cartridge is used for a 70min gradient from 0-60% MeCN with TFA modifier. TIC marks indicate 40sec fraction collections.

**Nanobore Columns**

|  |   |                            |
|--|---|----------------------------|
| <b>HAISIL 300 C4 5µm</b><br>30x0.15mm<br>HC-0315-W045  | <b>0.15mm I.D.</b><br>50x0.15mm<br>HC-0515-W045 | 100x0.15mm<br>HC-1015-W045 |
| <b>HAISIL 300 C8 5µm</b><br>30x0.15mm<br>HC-0315-W045  | <b>0.15mm I.D.</b><br>50x0.15mm<br>HC-0515-W045 | 100x0.15mm<br>HC-1015-W085 |
| <b>HAISIL 300 C18 5µm</b><br>30x0.15mm<br>HC-0315-W185 | <b>0.15mm I.D.</b><br>50x0.15mm<br>HC-0515-W185 | 100x0.15mm<br>HC-1015-W185 |

**Microbore Columns**

|   |   |                                 |                                 |                           |
|---|---|---------------------------------|---------------------------------|---------------------------|
| <b>HAISIL 300 C4 5µm</b><br>30x1.0mm<br>HS-0301-W045  | <b>1.0mm - 0.5mm - 0.3mm I.D.</b><br>50x1.0mm<br>HS-0501-W045 | 100x1.0mm<br>HS-1001-W045       | 150x1.0mm<br>HS-1501-W045       | 250x1.0mm<br>HS-2501-W045 |
| 30x0.5mm<br>HS-03M5-W045 \$250                        | 50x0.5mm<br>HS-05M5-W045 \$250                                | 100x0.5mm<br>HS-10M5-W045 \$275 | 150x0.5mm<br>HS-15M5-W045 \$300 |                           |
| 30x0.3mm<br>HS-03M3-W045 \$250                        | 50x0.3mm<br>HS-05M3-W045 \$250                                | 100x0.3mm<br>HS-10M3-W045 \$275 |                                 |                           |
| <b>HAISIL 300 C8 5µm</b><br>30x1.0mm<br>HS-0301-W085  | <b>1.0mm - 0.5mm - 0.3mm I.D.</b><br>50x1.0mm<br>HS-0501-W085 | 100x1.0mm<br>HS-1001-W085       | 150x1.0mm<br>HS-1501-W085       | 250x1.0mm<br>HS-2501-W085 |
| 30x0.5mm<br>HS-03M5-W085                              | 50x0.5mm<br>HS-05M5-W085                                      | 100x0.5mm<br>HS-10M5-W085       | 150x0.5mm<br>HS-15M5-W085       |                           |
| 30x0.3mm<br>HS-03M3-W085                              | 50x0.3mm<br>HS-05M3-W085                                      | 100x0.3mm<br>HS-10M3-W085       |                                 |                           |
| <b>HAISIL 300 C18 5µm</b><br>30x1.0mm<br>HS-0301-W185 | <b>1.0mm - 0.5mm - 0.3mm I.D.</b><br>50x1.0mm<br>HS-0501-W185 | 100x1.0mm<br>HS-1001-W185       | 150x1.0mm<br>HS-1501-W185       | 250x1.0mm<br>HS-2501-W185 |
| 30x0.5mm<br>HS-03M5-W185                              | 50x0.5mm<br>HS-05M5-W185                                      | 100x0.5mm<br>HS-10M5-W185       | 150x0.5mm<br>HS-15M5-W185       |                           |
| 30x0.3mm<br>HS-03M3-W185                              | 50x0.3mm<br>HS-05M3-W185                                      | 100x0.3mm<br>HS-10M3-W185       |                                 |                           |

**Analytical Columns - Stainless Steel**

|   |   |                           |                           |                           |
|---|---|---------------------------|---------------------------|---------------------------|
| <b>HAISIL 300 C4 5µm</b><br>30x4.6mm<br>HS-0346-W045  | <b>4.6, 3.0, and 2.1mm I.D. s.s. Analytical Columns</b><br>50x4.6mm<br>HS-0546-W045 | 100x4.6mm<br>HS-1046-W045 | 150x4.6mm<br>HS-1546-W045 | 250x4.6mm<br>HS-2546-W045 |
| 30x3.0mm<br>HS-0330-W045                              | 50x3.0mm<br>HS-0530-W045  | 100x3.0mm<br>HS-1030-W045 | 150x3.0mm<br>HS-1530-W045 | 250x3.0mm<br>HS-2530-W045 |
| 30x2.1mm<br>HS-0321-W045                              | 50x2.1mm<br>HS-0521-W045  | 100x2.1mm<br>HS-1021-W045 | 150x2.1mm<br>HS-1521-W045 | 250x2.1mm<br>HS-2521-W045 |
| <b>HAISIL 300 C8 5µm</b><br>30x4.6mm<br>HS-0346-W085  | <b>4.6, 3.0, and 2.1mm I.D. s.s. Analytical Columns</b><br>50x4.6mm<br>HS-0546-W085 | 100x4.6mm<br>HS-1046-W085 | 150x4.6mm<br>HS-1546-W085 | 250x4.6mm<br>HS-2546-W085 |
| 30x3.0mm<br>HS-0330-W085                              | 50x3.0mm<br>HS-0530-W085  | 100x3.0mm<br>HS-1030-W085 | 150x3.0mm<br>HS-1530-W085 | 250x3.0mm<br>HS-2530-W085 |
| 30x2.1mm<br>HS-0321-W085                              | 50x2.1mm<br>HS-0521-W085  | 100x2.1mm<br>HS-1021-W085 | 150x2.1mm<br>HS-1521-W085 | 250x2.1mm<br>HS-2521-W085 |
| <b>HAISIL 300 C18 5µm</b><br>30x4.6mm<br>HS-0346-W185 | <b>4.6, 3.0, and 2.1mm I.D. s.s. Analytical Columns</b><br>50x4.6mm<br>HS-0546-W185 | 100x4.6mm<br>HS-1046-W185 | 150x4.6mm<br>HS-1546-W185 | 250x4.6mm<br>HS-2546-W185 |
| 30x3.0mm<br>HS-0330-W185                              | 50x3.0mm<br>HS-0530-W185  | 100x3.0mm<br>HS-1030-W185 | 150x3.0mm<br>HS-1530-W185 | 250x3.0mm<br>HS-2530-W185 |
| 30x2.1mm<br>HS-0321-W185                              | 50x2.1mm<br>HS-0521-W185  | 100x2.1mm<br>HS-1021-W185 | 150x2.1mm<br>HS-1521-W185 | 250x2.1mm<br>HS-2521-W185 |

**PEEK Analytical Columns**

|   |   |                           |                           |
|---|---|---------------------------|---------------------------|
| <b>HAISIL 300 C4 5µm</b><br>50x4.6mm<br>HP-0546-W045  | <b>4.6, 3.0, and 2.1mm I.D. PEEK Analytical Columns</b><br>75x4.6mm<br>HP-0746-W045 | 100x4.6mm<br>HP-1046-W045 | 150x4.6mm<br>HP-1546-W045 |
| 50x3.0mm<br>HP-0530-W045                              | 75x3.0mm<br>HP-0730-W045  | 100x3.0mm<br>HP-1030-W045 | 150x3.0mm<br>HP-1530-W045 |
| 50x2.1mm<br>HP-0521-W045                              | 75x2.1mm<br>HP-0721-W045  | 100x2.1mm<br>HP-1021-W045 |                           |
| <b>HAISIL 300 C8 5µm</b><br>50x4.6mm<br>HP-0546-W085  | <b>4.6, 3.0, and 2.1mm I.D. PEEK Analytical Columns</b><br>75x4.6mm<br>HP-0746-W085 | 100x4.6mm<br>HP-1046-W085 | 150x4.6mm<br>HP-1546-W085 |
| 50x3.0mm<br>HP-0530-W085                              | 75x3.0mm<br>HP-0730-W085  | 100x3.0mm<br>HP-1030-W085 | 150x3.0mm<br>HP-1530-W085 |
| 50x2.1mm<br>HP-0521-W085                              | 75x2.1mm<br>HP-0721-W085  | 100x2.1mm<br>HP-1021-W085 |                           |
| <b>HAISIL 300 C18 5µm</b><br>50x4.6mm<br>HP-0546-W185 | <b>4.6, 3.0, and 2.1mm I.D. PEEK Analytical Columns</b><br>75x4.6mm<br>HP-0746-W185 | 100x4.6mm<br>HP-1046-W185 | 150x4.6mm<br>HP-1546-W185 |
| 50x3.0mm<br>HP-0530-W185                              | 75x3.0mm<br>HP-0730-W185  | 100x3.0mm<br>HP-1030-W185 | 150x3.0mm<br>HP-1530-W185 |
| 50x2.1mm<br>HP-0521-W185                              | 75x2.1mm<br>HP-0721-W185  | 100x2.1mm<br>HP-1021-W185 |                           |

**HAICART - Stainless Steel Analytical Cartridge Columns**

|   |  |                           |                           |
|---|--|---------------------------|---------------------------|
| <b>HAISIL 300 C4 5µm</b><br>40x4.6mm<br>HF-0446-W045  | <b>4.6 and 3.2mm I.D. s.s. HAICART Analytical Cartridges</b><br>50x4.6mm<br>HF-0546-W045 | 100x4.6mm<br>HF-1046-W045 | 150x4.6mm<br>HF-1546-W045 |
| 40x3.2mm<br>HF-0432-W045                              | 50x3.2mm<br>HF-0532-W045   | 100x3.2mm<br>HF-1032-W045 | 150x3.2mm<br>HF-1532-W045 |
| <b>HAISIL 300 C8 5µm</b><br>40x4.6mm<br>HF-0446-W085  | <b>4.6 and 3.2mm I.D. s.s. HAICART Analytical Cartridges</b><br>50x4.6mm<br>HF-0546-W085 | 100x4.6mm<br>HF-1046-W085 | 150x4.6mm<br>HF-1546-W085 |
| 40x3.2mm<br>HF-0432-W085                              | 50x3.2mm<br>HF-0532-W085   | 100x3.2mm<br>HF-1032-W085 | 150x3.2mm<br>HF-1532-W085 |
| <b>HAISIL 300 C18 5µm</b><br>40x4.6mm<br>HF-0446-W185 | <b>4.6 and 3.2mm I.D. s.s. HAICART Analytical Cartridges</b><br>50x4.6mm<br>HF-0546-W185 | 100x4.6mm<br>HF-1046-W185 | 150x4.6mm<br>HF-1546-W185 |
| 40x3.2mm<br>HF-0432-W185                              | 50x3.2mm<br>HF-0532-W185   | 100x3.2mm<br>HF-1032-W185 | 150x3.2mm<br>HF-1532-W185 |

**HAIPEEK - PEEK Analytical Cartridge Columns**

|   |  |
|---|--|
| <b>HAISIL 300 C4 5µm</b><br>40x2.1mm<br>HK-0421-W045      | <b>2.1mm I.D. PEEK HAIPEEK Analytical Cartridges</b><br>50x2.1mm<br>HK-0521-W045 |
| <b>HAISIL 300 C8 5µm</b><br>40x2.1mm<br>HK-0421-W085 \$23 | <b>2.1mm I.D. PEEK HAIPEEK Analytical Cartridges</b><br>50x2.1mm<br>HK-0521-W085 |
| <b>HAISIL 300 C18 5µm</b><br>40x2.1mm<br>HK-0421-W185     | <b>2.1mm I.D. PEEK HAIPEEK Analytical Cartridges</b><br>50x2.1mm<br>HK-0521-W185 |



Semi-Prep and Prep Columns

| HAISIL 300 C4 5µm | 10mm & 20mm I.D. Stainless Steel Semi-Prep and Prep Columns |              |              |          |
|-------------------|---|--------------|--------------|----------|
|                   | 50x10mm   | 100x10mm     | 150x10mm     | 250x10mm |
| HS-0510-W045      | HS-1010-W045  | HS-1510-W045 | HS-2510-W045 |          |
|                   | 50x20mm   | 100x20mm     | 150x20mm     | 250x20mm |
| HS-0520-W045      | HS-1020-W045  | HS-1520-W045 | HS-2520-W045 |          |

| HAISIL 300 C8 5µm | 10mm & 20mm I.D. Stainless Steel Semi-Prep and Prep Columns |              |              |          |
|-------------------|---|--------------|--------------|----------|
|                   | 50x10mm   | 100x10mm     | 150x10mm     | 250x10mm |
| HS-0510-W085      | HS-1010-W085  | HS-1510-W085 | HS-2510-W085 |          |
|                   | 50x20mm   | 100x20mm     | 150x20mm     | 250x20mm |
| HS-0520-W085      | HS-1020-W085  | HS-1520-W085 | HS-2520-W085 |          |

| HAISIL 300 C18 5µm | 10mm & 20mm I.D. Stainless Steel Semi-Prep and Prep Columns |              |              |          |
|--------------------|---|--------------|--------------|----------|
|                    | 50x10mm   | 100x10mm     | 150x10mm     | 250x10mm |
| HS-0510-W185       | HS-1010-W185  | HS-1510-W185 | HS-2510-W185 |          |
|                    | 50x20mm   | 100x20mm     | 150x20mm     | 250x20mm |
| HS-0520-W185       | HS-1020-W185  | HS-1520-W185 | HS-2520-W185 |          |

HAISpeed10 - 10mm I.D. Stainless Steel Cartridge Columns

| HAISIL 300 C4 5µm | 10mm I.D. s.s. Analytical / Semi-Prep Cartridges |              |          |
|-------------------|--|--------------|----------|
|                   | 30x10mm  | 50x10mm      | 100x10mm |
| HF-0310-W045      | 1/pkg  | 1/pkg        | 1/pkg    |
|                   | HF-0510-W045                                     | HF-1010-W045 |          |

| HAISIL 300 C8 5µm | 10mm I.D. s.s. Analytical / Semi-Prep Cartridges |              |          |
|-------------------|--|--------------|----------|
|                   | 30x10mm  | 50x10mm      | 100x10mm |
| HF-0310-W085      | 1/pkg  | 1/pkg        | 1/pkg    |
|                   | HF-0510-W085                                     | HF-1010-W085 |          |

| HAISIL 300 C18 5µm | 10mm I.D. s.s. Analytical / Semi-Prep Cartridges |              |          |
|--------------------|--|--------------|----------|
|                    | 30x10mm  | 50x10mm      | 100x10mm |
| HF-0310-W185       | 1/pkg  | 1/pkg        | 1/pkg    |
|                    | HF-0510-W185                                     | HF-1010-W185 |          |

HAISpeed20 - 20mm I.D. Prep Guard Cartridges

| HAISIL 300 C18 10µm | 20mm I.D. Stainless Steel Prep Guard Cartridge |
|---------------------|--|
|                     | 25x20mm 2/pkg                                  |
|                     | HF-0220-W181                                   |

Guard Cartridges - 3.2mm I.D.

| HAISIL 300 C4 5µm | HAICART Guard Cartridges |
|-------------------|--------------------------|
|                   | 20x3.2mm 5/pkg           |
|                   | H304                     |

| HAISIL 300 C8 5µm | HAICART Guard Cartridges |
|-------------------|--------------------------|
|                   | 20x3.2mm 5/pkg           |
|                   | H308                     |

| HAISIL 300 C18 5µm | HAICART Guard Cartridges |
|--------------------|--------------------------|
|                    | 20x3.2mm 5/pkg           |
|                    | H318                     |

Guard Cartridges - 2.1mm I.D.

| HAISIL 300 C4 5µm | PEEK HAIPEEK Guard Cartridges |
|-------------------|-------------------------------|
|                   | 20x2.1mm 5/pkg                |
|                   | HK-0221-W045                  |

| HAISIL 300 C8 5µm | PEEK HAIPEEK Guard Cartridges |
|-------------------|-------------------------------|
|                   | 20x2.1mm 5/pkg                |
|                   | HK-0221-W085                  |

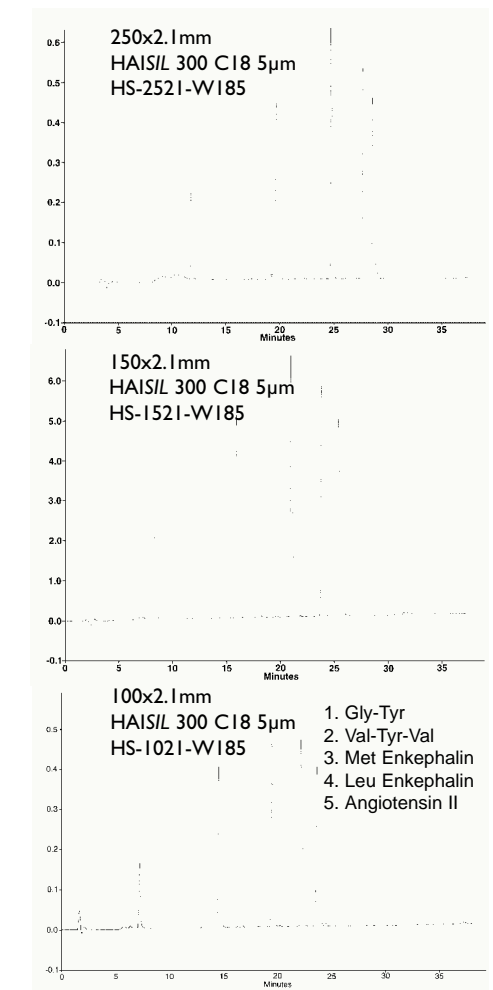
| HAISIL 300 C18 5µm | HAIPEEK Guard Cartridges |
|--------------------|--------------------------|
|                    | 20x2.1mm 5/pkg           |
|                    | HK-0221-W185             |

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

The Role of Column Length in Gradient Separations

Changes in column length have a direct and linear effect on theoretical plates and analysis time in isocratic separations. Column length plays a less important role, however, in gradient techniques. The three chromatograms below illustrate how well packed short HPLC columns yield very similar peptide separations under identical gradient conditions.

For this study, the 2.1mm I.D. HAISIL 300 C18 5µm columns ranged from 250 to 100mm in length. While solvent and analysis time savings may be minimal, column cost savings can be significant when using as short a column as possible. Short columns also exhibit lower pressure at high flow rates.





### 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** = CLIPEUS  
**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

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