

## HyperClone™ is a GUARANTEED alternative to Hypersil™ at a fraction of the cost

If HyperClone™ does not provide at least an equivalent separation compared to Hypersil® columns of the same phase, particle size and comparable dimensions, send in your comparative data within 45 days and keep the HyperClone column for FREE.

HyperClone was developed by Phenomenex and is packed by Phenomenex, thereby reducing the chance of column-to-column variation.

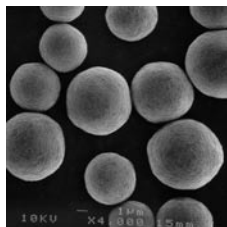
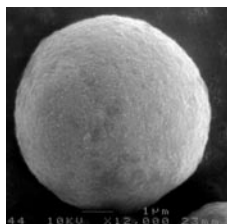
Comparisons of physical and chemical characteristics of HyperClone™ and Hypersil™ are listed below. As you can see, HyperClone™ and Hypersil™ compare very well for important specifications such as particle size, pore size and carbon load.

### HyperClone™

## VS.

### Hypersil™

#### SEM of Base Silica



#### Material Characteristics

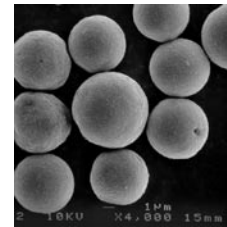
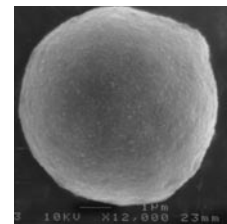
##### Parameter

| HyperClone™ (BDS silica) |                                  | Hypersil™ (BDS silica) ‡ |  |
|--------------------------|----------------------------------|--------------------------|--|
| 3, 5                     | Particle Size (µm)               | 3, 5                     |  |
| 130                      | Pore Size (Å)                    | 130                      |  |
| 155                      | Surface Area (m <sup>2</sup> /g) | 170                      |  |
| 0.6                      | Pore Volume (mL/g)               | 0.6                      |  |

| HyperClone™ (regular silica) |                                  | Hypersil™ (regular silica) ‡ |  |
|------------------------------|----------------------------------|------------------------------|--|
| 3, 5                         | Particle Size (µm)               | 3, 5                         |  |
| 120                          | Pore Size (Å)                    | 120                          |  |
| 155                          | Surface Area (m <sup>2</sup> /g) | 170                          |  |
| 0.6                          | Pore Volume (mL/g)               | 0.6                          |  |

| HyperClone™                     |           | Hypersil™ ‡ |  |
|---------------------------------|-----------|-------------|--|
| <b>Carbon Load % Comparison</b> |           |             |  |
| 7                               | BDS C8    | 7           |  |
| 11                              | BDS C18   | 11          |  |
| 6.5                             | MOS (C8)  | 6.5         |  |
| 10                              | ODS (C18) | 10          |  |
| 4                               | CN (CPS)  | 4           |  |

#### SEM of Base Silica

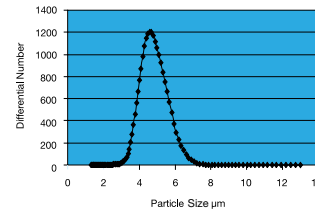
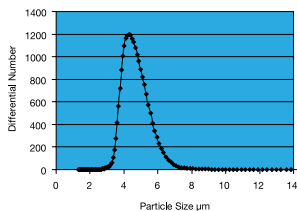


### HyperClone™

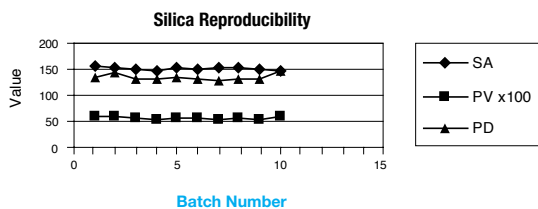
## VS.

### Hypersil™

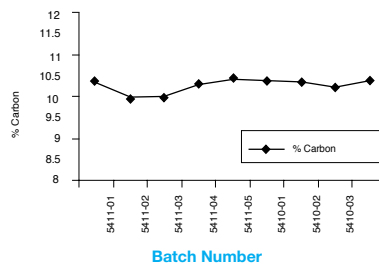
#### Particle Size Distribution†



#### HyperClone™ Reproducibility

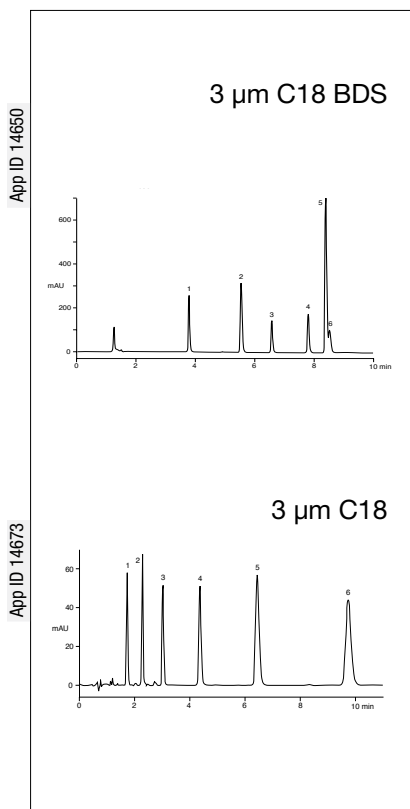
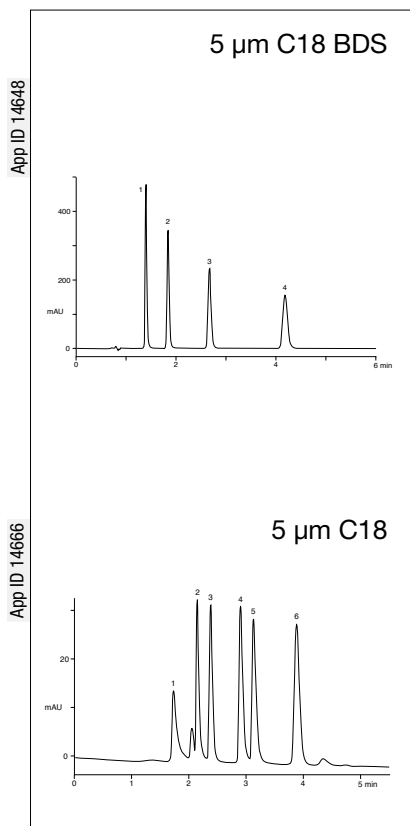


#### Carbon Load Data

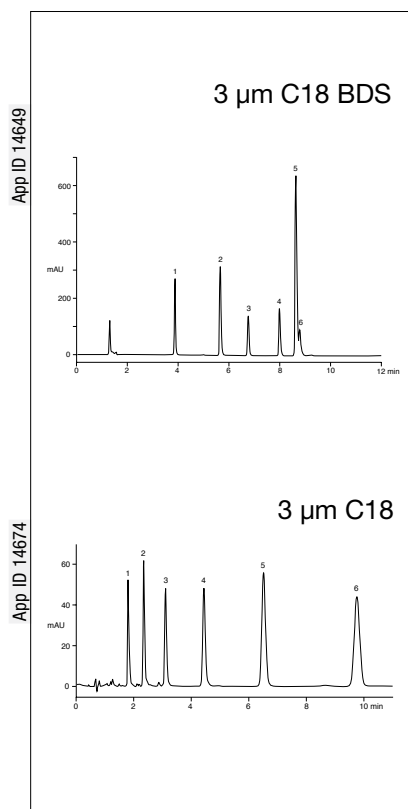
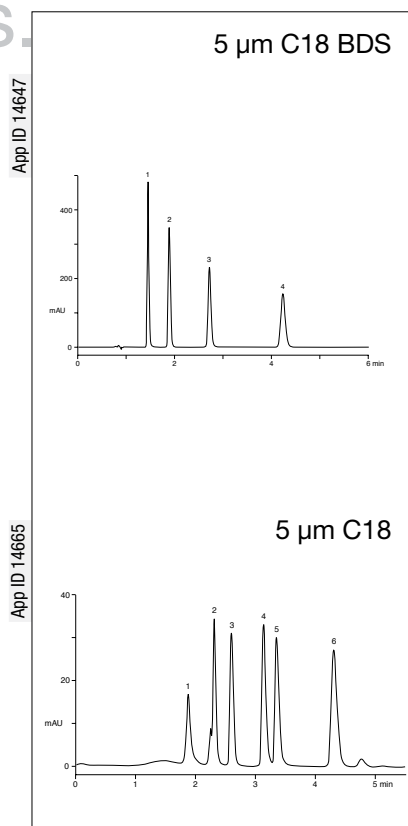


‡ All Hypersil information obtained from Thermo Electron Corporation 2006-2007 catalog.

## HyperClone™



## Hypersil™



### Parabens

**Dimensions:** 150 x 4.6 mm  
**Mobile Phase:** Acetonitrile / 50 mM  $\text{KH}_2\text{PO}_4$ , pH=7.0 (40:60)  
**Flow Rate:** 2 mL/min  
**Detection:** UV @ 260 nm  
**Sample:** 1. Methylparaben  
 2. Ethylparaben  
 3. Propylparaben  
 4. Butylparaben

### Organic Acids

**Dimensions:** 150 x 4.6 mm  
**Mobile Phase:** 20 mM  $\text{KH}_2\text{PO}_4$ , pH=2.5 / Methanol (97:3)  
**Flow Rate:** 1 mL/min  
**Detection:** UV @ 220 nm  
**Sample:** 1. Oxalic Acid  
 2. Formic Acid  
 3. Malic Acid  
 4. Lactic Acid  
 5. Acetic Acid  
 6. Citric Acid

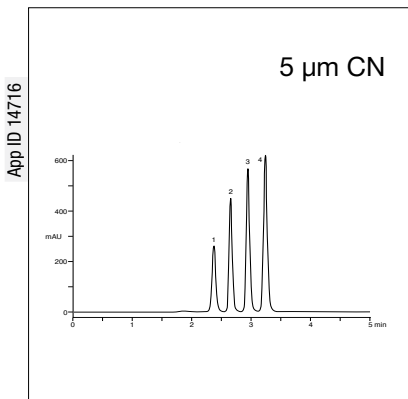
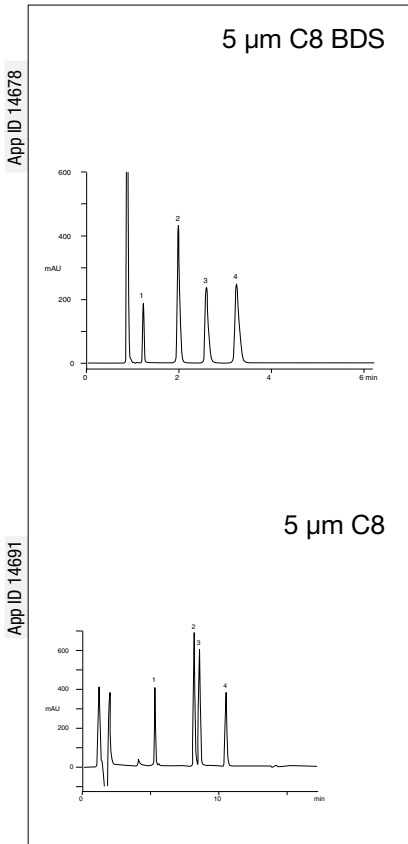
### Basic Compounds (Beta-Blockers)

**Dimensions:** 100 x 4.6 mm  
**Mobile Phase:** A) Acetonitrile  
 B) 20 mM  $\text{KH}_2\text{PO}_4$ , pH=2.5  
**Gradient:** A/B (5:95) to A/B (50:50) in 10 min  
**Flow Rate:** 1.5 mL/min  
**Detection:** UV @ 230 nm  
**Sample:** 1. Atenolol  
 2. Pindolol  
 3. Metoprolol  
 4. Propranolol  
 5. Labetalol  
 6. Alprenolol

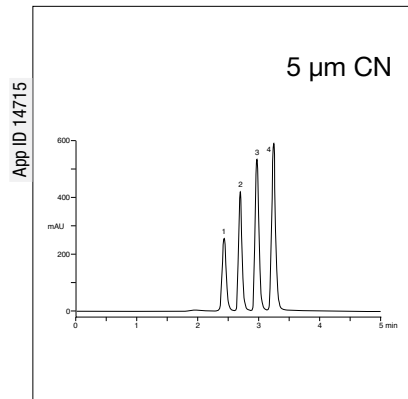
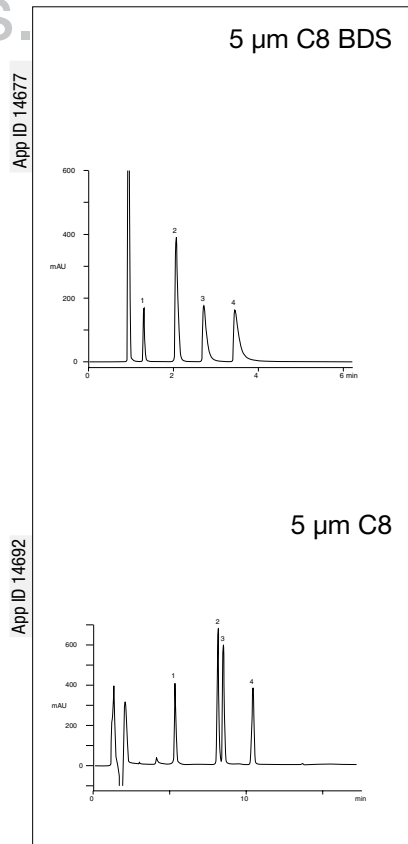
### Alkylbenzenes

**Dimensions:** 100 x 4.6 mm  
**Mobile Phase:** Acetonitrile / Water (65:35)  
**Flow Rate:** 1.5 mL/min  
**Detection:** UV @ 254 nm  
**Sample:** 1. Benzene  
 2. Toluene  
 3. Ethylbenzene  
 4. Propylbenzene  
 5. Butylbenzene  
 6. Amylbenzene

## HyperClone™



## Hypersil™



### Basic Drugs

**Dimensions:** 150 x 4.6 mm  
**Mobile Phase:** 50 mM KH<sub>2</sub>PO<sub>4</sub>, pH=2.5 / Acetonitrile (80:20)  
**Flow Rate:** 2 mL/min  
**Detection:** UV @ 220 nm  
**Sample:** 1. Pseudoephedrine  
 2. Lidocaine  
 3. Pyrilamine  
 4. Chlorpheniramine

### Fatty Acids (Long Chain)

**Dimensions:** 150 x 4.6 mm  
**Mobile Phase:** A) 0.1 % Acetic Acid in Water  
 B) 0.1 % Acetic Acid in Acetonitrile  
**Gradient:** A/B (30:70) to A/B (10:90) in 12 min  
**Flow Rate:** 1 mL/min  
**Detection:** UV @ 210 nm  
**Sample:** 1. Lauric Acid  
 2. Arachidonic Acid  
 3. Linoleic Acid  
 4. Oleic Acid

### Phthalates

**Dimensions:** 150 x 4.6 mm  
**Mobile Phase:** Hexane / [Methylene chloride:Methanol (80:20)] (95:5)  
**Flow Rate:** 1 mL/min  
**Detection:** UV @ 254 nm  
**Sample:** 1. Diisooctyl Phthalate  
 2. Dibutyl Phthalate  
 3. Diethyl Phthalate  
 4. Dimethyl Phthalate

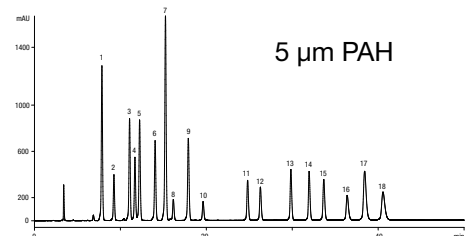
App ID 15988

### PAH: EPA METHOD 610

**Column:** HyperClone 5 μm PAH  
**Dimensions:** 250 x 4.6 mm  
**Part No.:** 00G-4427-E0  
**Mobile Phase:** A: Water B: Acetonitrile  
**Gradient:** 0-5 minute 50 % B, 5-30 minute 100 % B, hold 20 minute at 100 % (50 minute total run time)  
**Flow Rate:** 1.1 mL/min  
**Detection:** UV @ 210 nm

**Sample:**

|                        |                       |                            |
|------------------------|-----------------------|----------------------------|
| 1. Naphthalene         | 7. o-Terphenyl(1S)    | 13. Benzo[b]fluoranthene   |
| 2. Acenaphthylene      | 8. Anthracene         | 14. Benzo[k]fluoranthene   |
| 3. 2-Methylnaphthalene | 9. Fluoranthene       | 15. Benzo[a]pyrene         |
| 4. Acenaphthene        | 10. Pyrene            | 16. Dibenzo[a,h]anthracene |
| 5. Fluorene            | 11. Benz[a]anthracene | 17. Benzo[g,h,i]perylene   |
| 6. Phenanthrene        | 12. Chrysene          | 18. Indeno[1,2,3-cd]pyrene |



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## ORDERING INFORMATION

SecurityGuard™ Analytical Cartridges require universal holder Part No.: KJO-4282

| 3 µm Minibore and Analytical Columns (mm) |             |             |             |             |             | SecurityGuard™ Cartridges |                      |
|---|-------------|-------------|-------------|-------------|-------------|---------------------------|----------------------|
| Phases                                    | 150 x 2.0   | 150 x 3.2   | 100 x 4.6   | 125 x 4.0   | 150 x 4.6   | 4 x 2.0 mm*<br>/10pk      | 4 x 3.0 mm*<br>/10pk |
| Silica                                    | —           | —           | —           | —           | 00F-4353-E0 | AJO-4347                  | AJO-4348             |
| MOS (C8)                                  | 00F-4354-B0 | 00F-4354-R0 | 00D-4354-E0 | 00E-4354-D0 | 00F-4354-E0 | AJO-4289                  | AJO-4290             |
| ODS (C18)                                 | 00F-4356-B0 | 00F-4356-R0 | 00D-4356-E0 | 00E-4356-D0 | 00F-4356-E0 | AJO-4286                  | AJO-4287             |
| CN  | —           | —           | 00D-4421-E0 | —           | 00F-4421-E0 | AJO-4304                  | AJO-4305             |
| BDS C8                                    | 00F-4417-B0 | —           | 00D-4417-E0 | —           | 00F-4417-E0 | AJO-4289                  | AJO-4290             |
| BDS C18                                   | 00F-4419-B0 | 00F-4419-R0 | 00D-4419-E0 | 00E-4419-D0 | 00F-4419-E0 | AJO-4286                  | AJO-4287             |

for ID: 2.0-3.0 mm      3.2-8.0 mm

| 5 µm Minibore and Analytical Columns (mm) |             |             |             |             |             |             | SecurityGuard™ Cartridges |             |             |                      |                      |
|---|-------------|-------------|-------------|-------------|-------------|-------------|---------------------------|-------------|-------------|----------------------|----------------------|
| Phases                                    | 150 x 2.0   | 150 x 3.2   | 250 x 3.2   | 125 x 4.0   | 250 x 4.0   | 100 x 4.6   | 125 x 4.6                 | 150 x 4.6   | 250 x 4.6   | 4 x 2.0 mm*<br>/10pk | 4 x 3.0 mm*<br>/10pk |
| Silica                                    | —           | —           | —           | —           | —           | —           | —                         | 00F-4358-E0 | 00G-4358-E0 | AJO-4347             | AJO-4348             |
| MOS (C8)                                  | 00F-4359-B0 | —           | —           | 00E-4359-D0 | —           | —           | —                         | 00F-4359-E0 | 00G-4359-E0 | AJO-4289             | AJO-4290             |
| ODS (C18)                                 | 00F-4361-B0 | 00F-4361-R0 | 00G-4361-R0 | 00E-4361-D0 | 00G-4361-D0 | —           | —                         | 00F-4361-E0 | 00G-4361-E0 | AJO-4286             | AJO-4287             |
| CN  | —           | 00F-4422-R0 | 00G-4422-R0 | —           | —           | —           | —                         | 00F-4422-E0 | 00G-4422-E0 | AJO-4304             | AJO-4305             |
| PAH                                       | —           | —           | —           | —           | —           | 00D-4427-E0 | 00E-4427-E0               | —           | 00G-4427-E0 | —                    | —                    |
| BDS C8                                    | 00F-4418-B0 | —           | —           | —           | —           | —           | —                         | 00F-4418-E0 | 00G-4418-E0 | AJO-4289             | AJO-4290             |
| BDS C18                                   | 00F-4420-B0 | 00F-4420-R0 | —           | 00E-4420-D0 | 00G-4420-D0 | —           | —                         | 00F-4420-E0 | 00G-4420-E0 | AJO-4286             | AJO-4287             |

for ID: 2.0-3.0 mm      3.2-8.0 mm

| 5 µm Semi-Prep and Preparative Columns (mm) |             |             | SecurityGuard™ Cartridges |                       |
|---|-------------|-------------|---------------------------|-----------------------|
| Phases                                      | 250 x 10    | 250 x 21.2  | 10 x 10 mm‡<br>/3pk       | 15 x 21.2 mm**<br>/ea |
| ODS (C18)                                   | 00G-4361-N0 | 00G-4361-P0 | AJO-7221                  | AJO-7839              |
| BDS C18                                     | 00G-4420-N0 | 00G-4420-P0 | AJO-7221                  | AJO-7839              |

for ID: 9-16 mm      18-30 mm

\*SecurityGuard™ Analytical Cartridges require holder, Part No.: KJO-4282

‡Semi-prep SecurityGuard™ Cartridges require holder, Part No.: AJO-7220

\*\*PREP SecurityGuard™ Cartridges require holder, Part No.: AJO-8223



Other dimensions available upon request.



See p. 219 for SecurityGuard Cartridge Holders and Cartridges.

HyperClone™ is a trademark of Phenomenex, Inc.  
Hypersil™ is a trademark of Thermo Electron Corporation.  
Phenomenex is not associated with Thermo Electron Corporation.

Comparative chromatograms shown on previous pages may not be representative of all applications.