

# InertSustain<sup>®</sup> Phenylhexyl

*A New Second Choice Column to  
Change Chromatographic Behavior*



**GL Sciences Inc.**

## InertSustain Phenylhexyl HPLC Columns

### Providing Alternative Selectivity to C18 Phases

InertSustain Phenylhexyl columns are bonded with phenylhexyl groups, which employs a phenyl ring with a hexyl (6-carbon) linker and is densely bonded to our newly developed ES silica gel delivering complementary selectivity to straight alkyl-chain columns, but with industry leading reproducibility, inertness and low back pressure.

### Physical Properties

Silica :	ES (Evolved Surface) Silica Gel
Particle Size :	3 $\mu\text{m}$ , 5 $\mu\text{m}$
Surface Area :	350 $\text{m}^2/\text{g}$
Pore Size :	100 $\text{\AA}$ (10 nm)
Pore Volume :	0.85 mL/g
Bonded Phase :	Phenylhexyl Groups
End-capping :	Complete
Carbon Loading :	9.0 %
USP Code :	L11
pH Range :	1.0 to 10.0

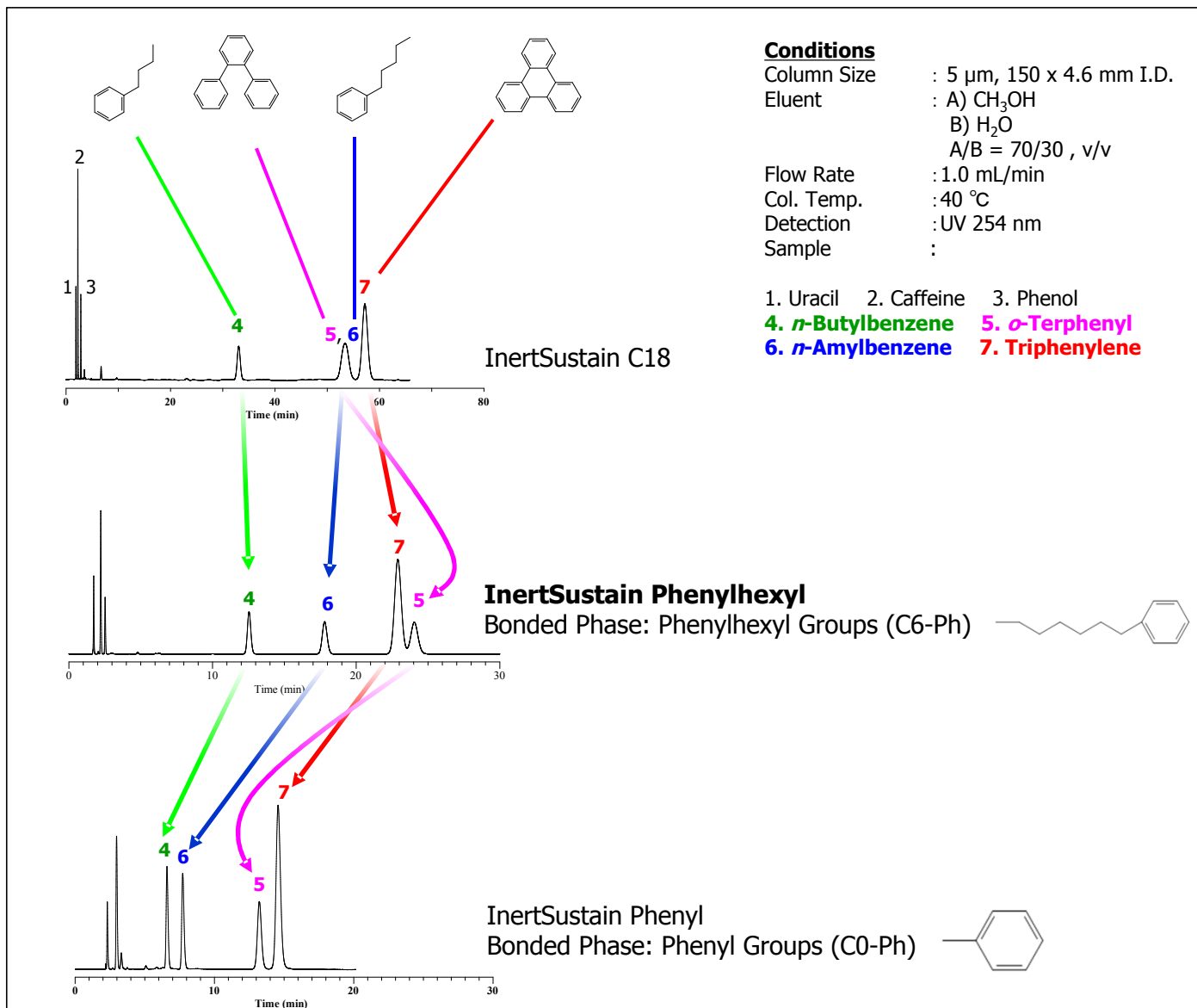


### Benefits

- Different selectivity to C18 phases
- Strong Retentivity than other Phenyl phases
- Highly inert packing material results in less tailing of peaks for virtually any type of analytes
- Deliver extreme sensitivity analysis in LC-MS and LC-MS/MS methods
- Extreme resistance to low and high pH mobile phases
- Excellent stability to 100 % aqueous mobile phases
- Compatible with The European Pharmacopeia (Ph. Eur.) methods
- Endlessly reproducible from column-to-column and batch-to-batch

## Different Selectivity to C18 Phases

The following selectivity test was used to understand the difference in selectivity between a conventional C18 phase, Phenylhexyl and Phenyl phases.



Sample No.1, Uracil cannot be retained in a reversed phase mode when using the mobile phase condition described on the right. Therefore, Uracil was used to determine the  $t_0$  position.  $t_0$ : Void Volume

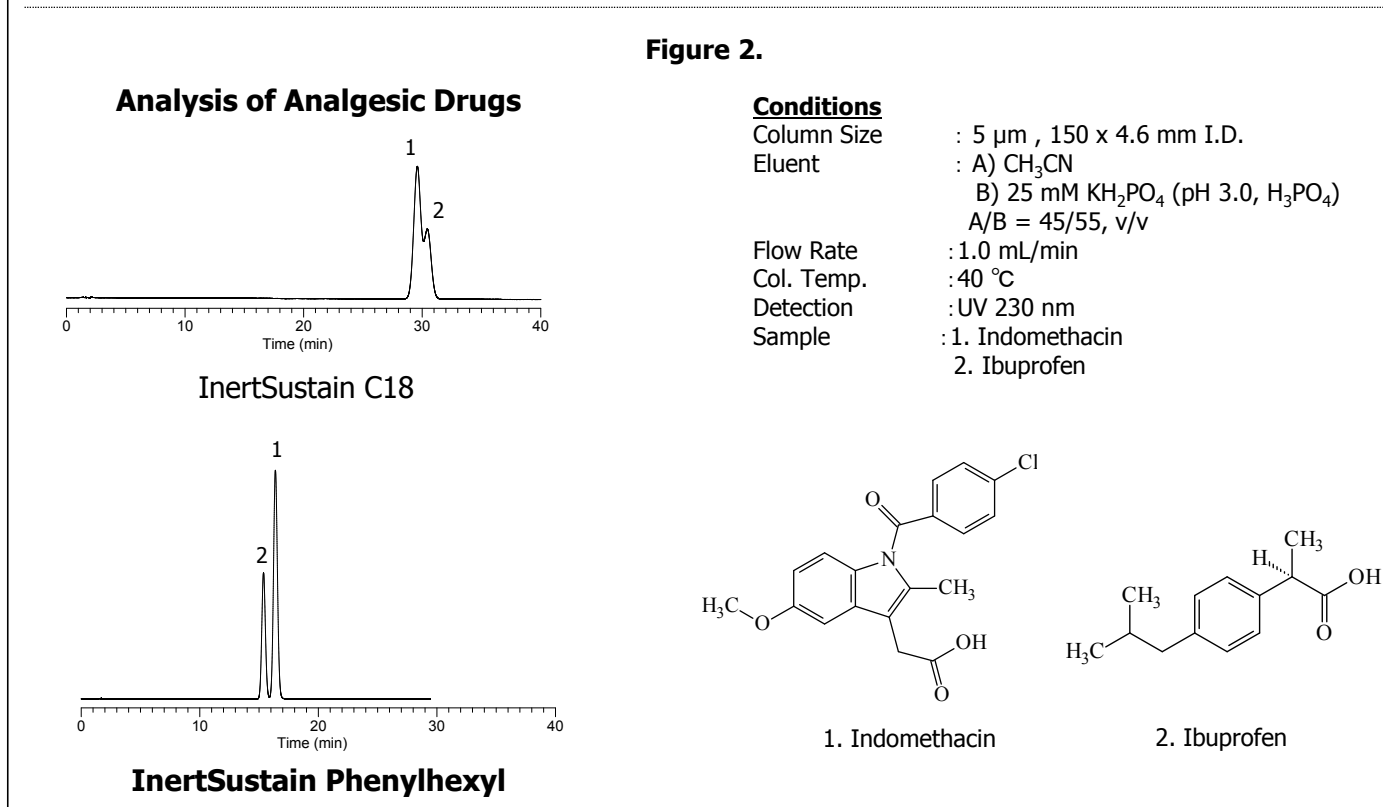
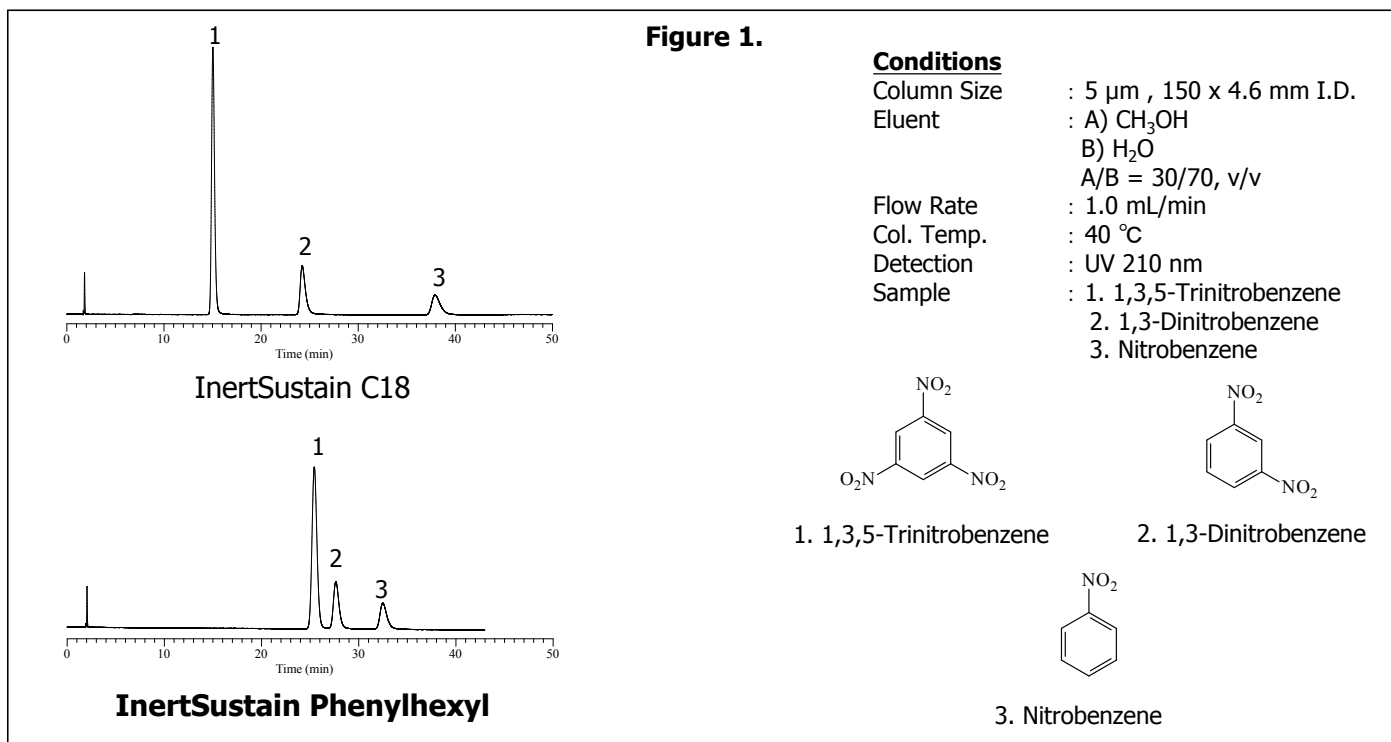
Sample No.2, 3, Caffeine and Phenol are used to confirm the amount of residual silanol on the surface of the silica gel. Caffeine elutes later against Phenol when there is a lot of residual silanol on the surface of the silica gel.

Sample No.4, *n*-Butylbenzene and Sample No.6, *n*-Amylbenzene were used to determine the hydrophobic property of the column. *n*-Amylbenzene elutes later against *n*-Butylbenzene when the hydrophobicity of the column is high.

Stereoselectivity is indicated by Sample No.5, *o*-Terphenyl and Sample No.7, Triphenylene. *o*-Terphenyl has a twisted tertiary structure and Triphenylene has a planar structure. Triphenylene elutes later against *o*-Terphenyl when the stereoselectivity of the column is high.

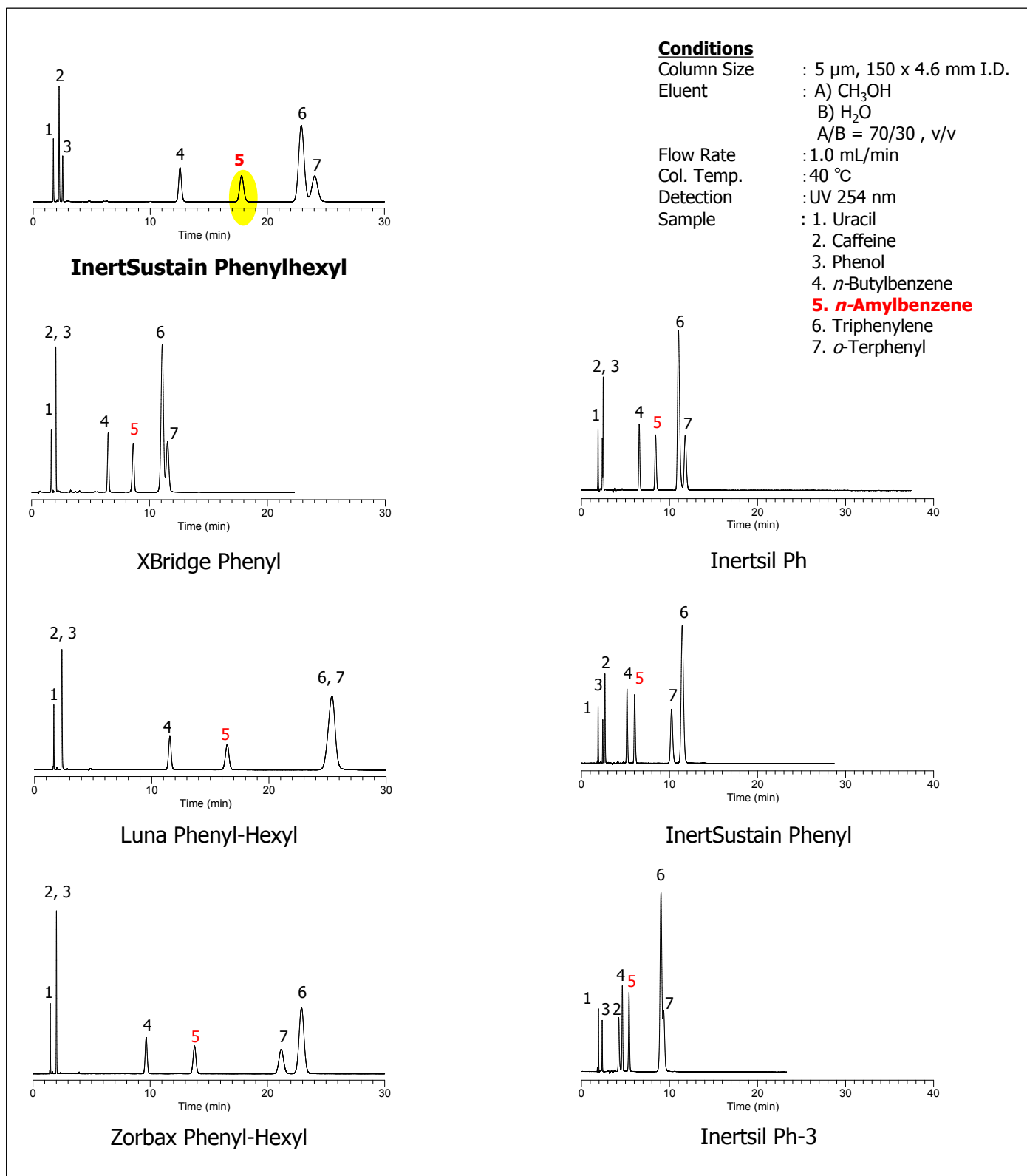
## Comparison of Selectivity Between a C18 and Phenylhexyl Phase

Figure 1 compares the selectivity provided by a conventional C18 and Phenylhexyl phase. InertSustain Phenylhexyl show stronger retention of compounds containing nitro groups. Figure 2 compares the separation of analgesic drugs on a conventional C18 and Phenylhexyl phase. Indomethacin was strongly retained on InertSustain Phenylhexyl due to the presence of strong pi-pi interaction resulting in change in elution order with better separation.



## Strong Retentivity than other Phenyl Phases

The retentivity of InertSustain Phenylhexyl is stronger comparing with commercially available Phenyl columns. Sample No.5, *n*-Amylbenzene was used to determine the hydrophobic property of columns.

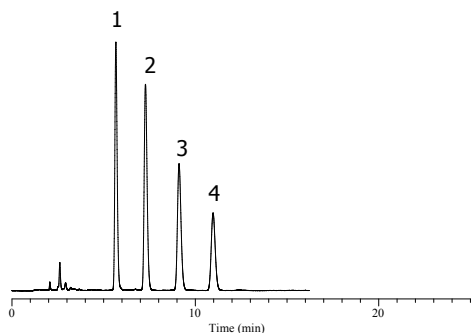


# InertSustain Phenylhexyl HPLC Columns

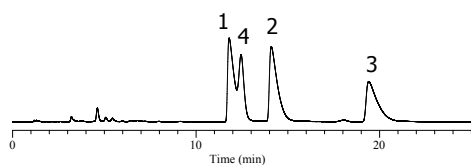
## Benefits of Highly Inert Packing Material

InertSustain Phenylhexyl also maintains the same extreme inertness, wide pH range and provide separations with symmetric peaks. Poorly end-capped columns often show tailing of peaks due to the presence of silanols resulting in longer analysis time.

### Analysis of Antidepressants



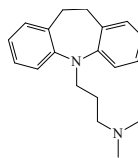
### InertSustain Phenylhexyl



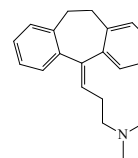
### Luna Phenyl-Hexyl

### Conditions

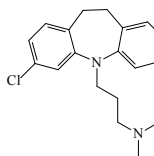
Eluent	: A) CH <sub>3</sub> CN B) 25 mM KH <sub>2</sub> PO <sub>4</sub> (pH 7.0, K <sub>2</sub> HPO <sub>4</sub> ) A/B = 50/50, v/v
Flow Rate	: 1.0 mL/min
Col. Temp.	: 40 °C
Detection	: UV 254 nm
Sample	: 1. Imipramine hydrochloride 2. Amitriptyline hydrochloride 3. Clomipramine hydrochloride 4. Mianserin hydrochloride



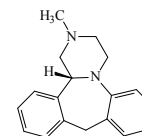
1. Imipramine hydrochloride



2. Amitriptyline hydrochloride



3. Clomipramine hydrochloride

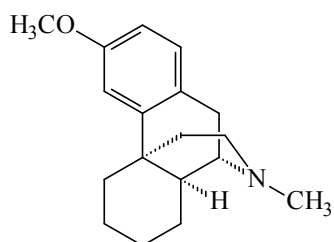


4. Mianserin hydrochloride



## Extreme Sensitivity Analysis in LC-MS and LC-MS/MS Methods

The usage of highly inert packing material creates another benefit for LC-MS and LC-MS/MS applications. As shown below, InertSustain Phenylhexyl deliver excellent peak shape and high sensitivity even with strong basic analyte.



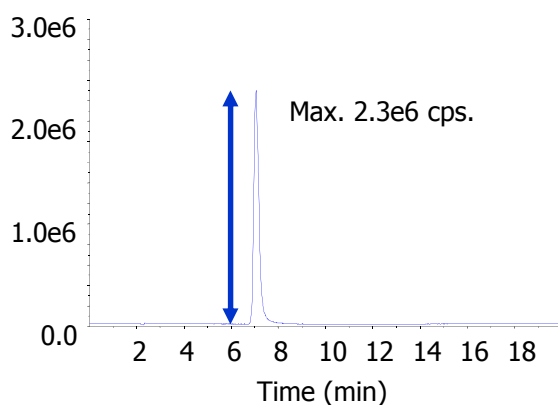
Dextromethorphan

### Conditions

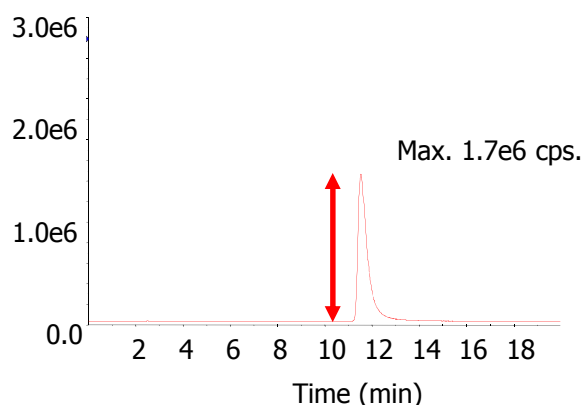
System : GL-7700  
 4000 QTRAP  
 Column : 3  $\mu$ m, 150 x 2.1 mm I.D.  
 Eluent : A) CH<sub>3</sub>CN  
 B) 10 mM CH<sub>3</sub>COONH<sub>4</sub> in H<sub>2</sub>O  
 A/B = 30/70 (gradient mixer ), v/v  
 Flow rate : 200  $\mu$ L/min  
 Col. Temp. : 40  $^{\circ}$ C  
 Detection : SIM (ESI, Positive )

CUR	IS	TEM	GS1	GS2	ihe
10	5500	500	60	40	ON

Injection Vol. : 1  $\mu$ L  
 Sample : Dextromethorphan (50 ng/mL)



**InertSustain Phenylhexyl**

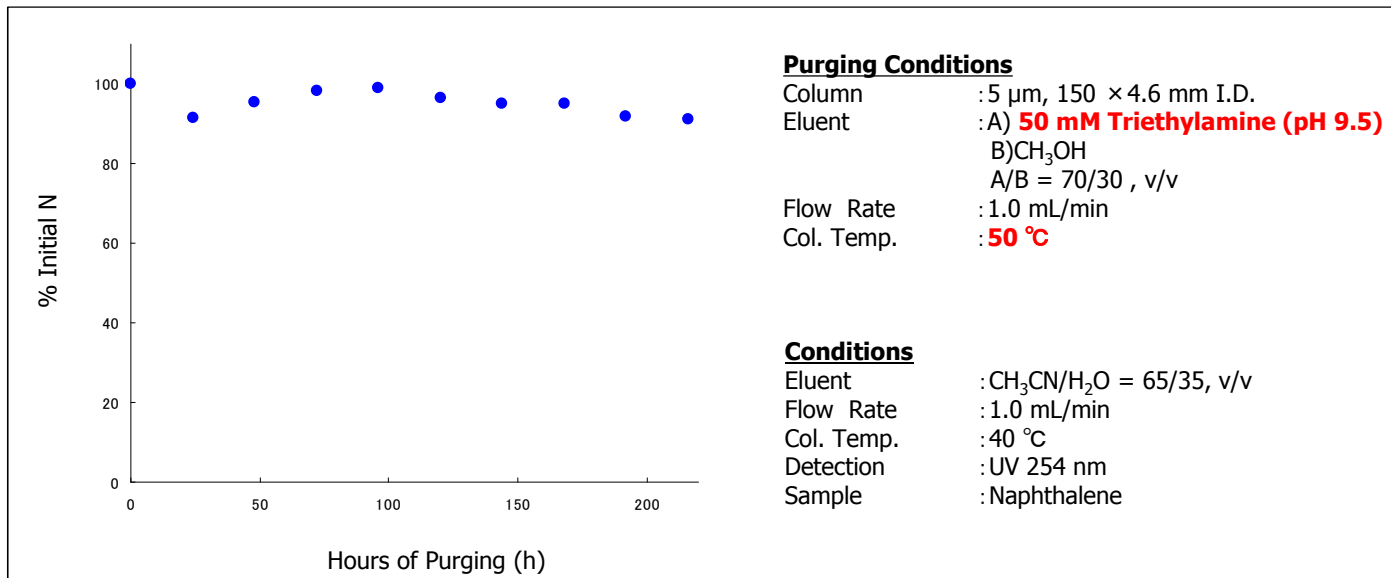


**Other Brands Phenyl Column**



## Wide pH Compatibility with Long Column Lifetime

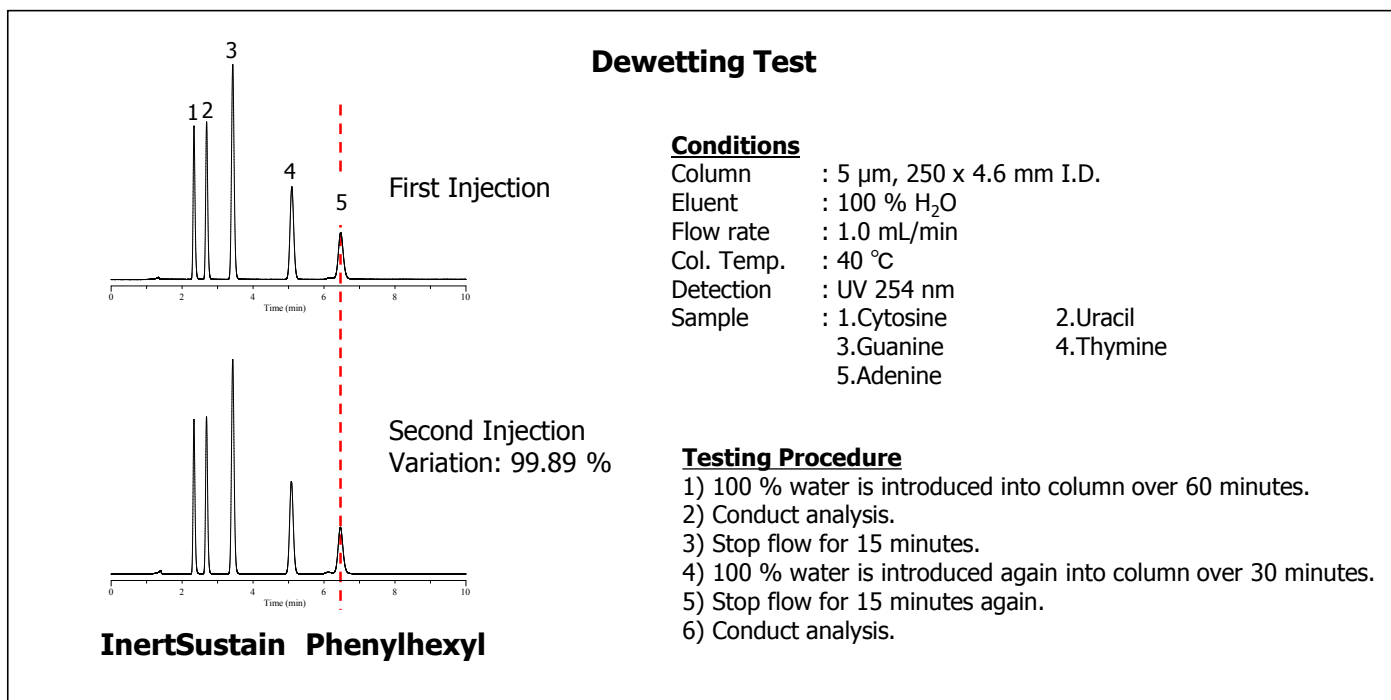
As shown in the experiment below, InertSustain Phenylhexyl maintained high efficiency for 200 hours.



## Excellent Stability to 100 % Aqueous Mobile Phases

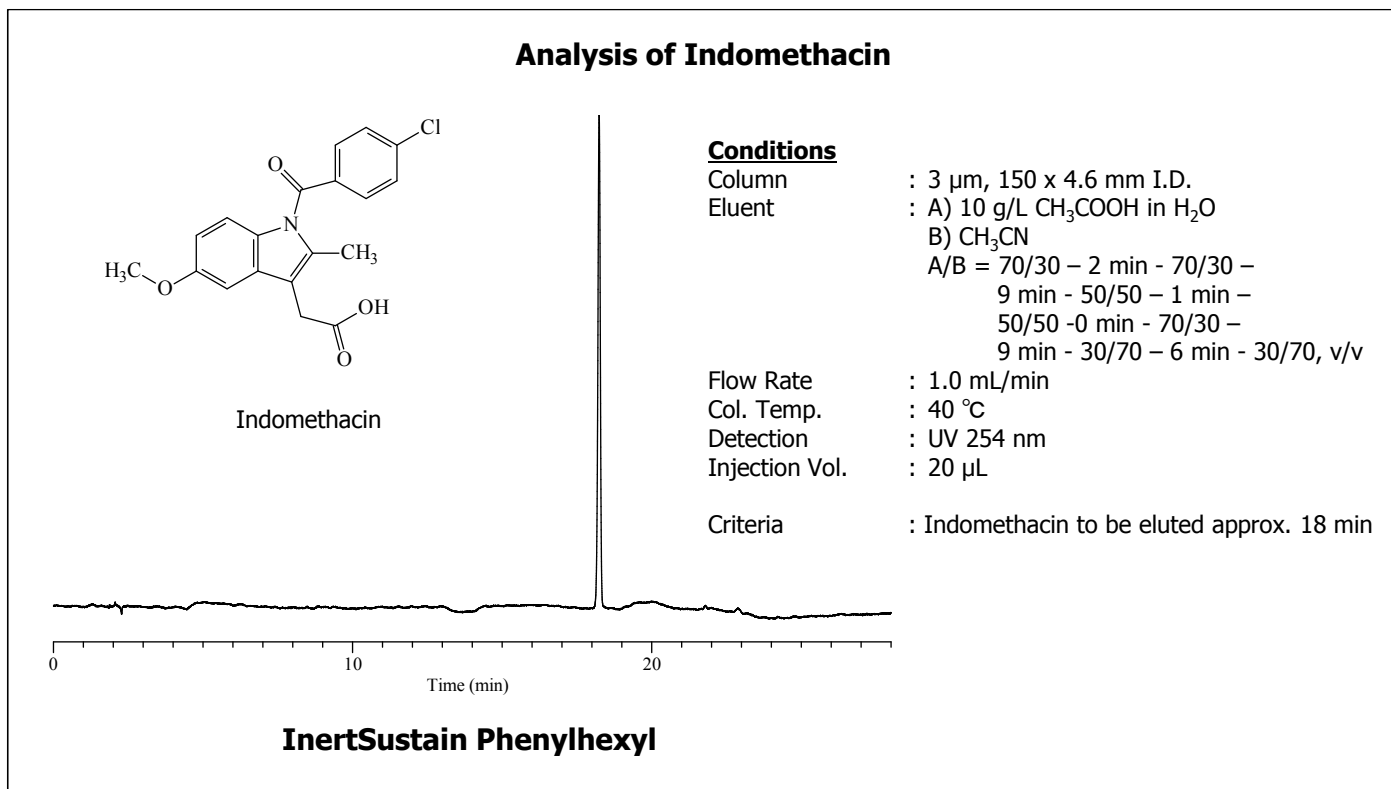
When analyzing hydrophilic compounds under water rich mobile phase condition, once the pump is stopped, the hydrophobic bonded group pushes the aqueous mobile phase out of the pore in an irreversible fashion, in what has become known as the dewetting phenomenon.

As shown in the following test, InertSustain Phenylhexyl demonstrates excellent stability to dewetting guaranteeing highly stable, reliable and reproducible chromatograms.





Compatible with The European Pharmacopeia (Ph. Eur.) Methods



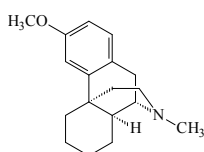
Access to the latest pharmaceutical, life science, environmental and food applications at [www.glsciences.com/tech/inertsearch](http://www.glsciences.com/tech/inertsearch)

## Comparison of Performance

By conducting the 2 tests below, we can evaluate the degree of inertness of the column. To strictly evaluate all columns, the below mentioned samples were used, which are all known as strong adsorptive compounds.

### Strong Basic Compound Test

Dextromethorphan and Berberine Chloride are strong basic compounds. Severe tailing can be confirmed when the packing material contains residual silanol groups.



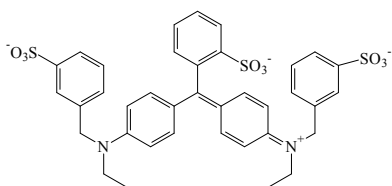
1:Dextromethorphan

### Conditions

Column	: 5 $\mu$ m, 150 x 4.6 mm I.D.
Eluent	: A) CH <sub>3</sub> CN B) 25 mM K <sub>2</sub> HPO <sub>4</sub> (pH 7.0, KH <sub>2</sub> PO <sub>4</sub> ) A/B = 40/60,v/v
Flow Rate	: 1.0 mL/min
Col. Temp.	: 40 °C
Detection	: UV 230 nm
Injection Vol	: 3 $\mu$ L
Sample	: 1: Dextromethorphan

### Strong Acidic Compound Test

Brilliant Blue FCF has three sulfonic groups in its chemical structure, severe tailing will occur when the surface of the packing material is slightly basic.



1:Brilliant Blue FCF

### Conditions

Column	: 5 $\mu$ m, 150 x 4.6 mm I.D.
Eluent	: A) CH <sub>3</sub> CN B) 0.1 % H <sub>3</sub> PO <sub>4</sub> A/B = 25/75,v/v
Flow Rate	: 1.0 mL/min
Col. Temp.	: 40 °C
Detection	: UV 254 nm
Injection Vol	: 5 $\mu$ L
Sample	: 1:Brilliant Blue FCF 2:Phenol 3:Salicylic acid

## Comparison of Performance

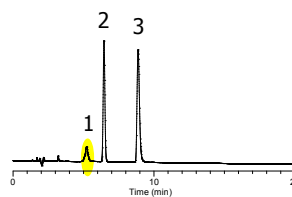
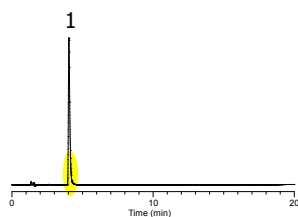
### Strong Basic Compound Test

### Strong Acidic Compound Test

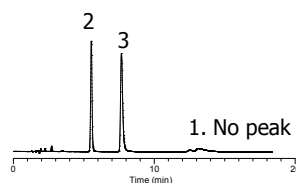
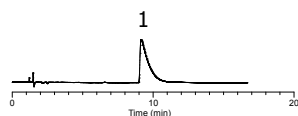
#### InertSustain Phenylhexyl

1: Dextromethorphan

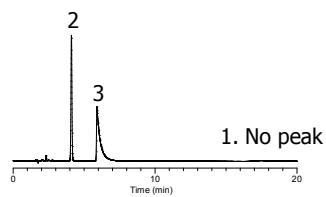
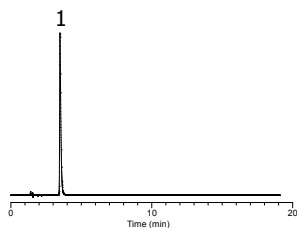
1: Brilliant Blue FCF  
2: Phenol  
3: Salicylic acid



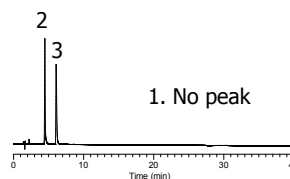
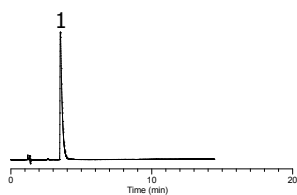
#### Luna Phenyl-Hexyl



#### XBridge Phenyl



#### Zorbax Phenyl-Hexyl



## InertSustain Phenylhexyl HPLC Columns

### Analytical Columns

Cat#	Description	Max. Operating Pressure (MPa)
5020-89209	InertSustain Phenylhexyl HP 3 µm 2.1x30mm	50
5020-89210	InertSustain Phenylhexyl HP 3 µm 2.1x50mm	50
5020-89211	InertSustain Phenylhexyl HP 3 µm 2.1x75mm	50
5020-89212	InertSustain Phenylhexyl HP 3 µm 2.1x100mm	50
5020-89213	InertSustain Phenylhexyl HP 3 µm 2.1x150mm	50
5020-89214	InertSustain Phenylhexyl HP 3 µm 2.1x250mm	50
5020-89215	InertSustain Phenylhexyl HP 3 µm 3.0x30mm	50
5020-89216	InertSustain Phenylhexyl HP 3 µm 3.0x50mm	50
5020-89217	InertSustain Phenylhexyl HP 3 µm 3.0x75mm	50
5020-89218	InertSustain Phenylhexyl HP 3 µm 3.0x100mm	50
5020-89219	InertSustain Phenylhexyl HP 3 µm 3.0x150mm	50
5020-89220	InertSustain Phenylhexyl HP 3 µm 3.0x250mm	50
5020-89221	InertSustain Phenylhexyl HP 3 µm 4.6x30mm	50
5020-89222	InertSustain Phenylhexyl HP 3 µm 4.6x50mm	50
5020-89223	InertSustain Phenylhexyl HP 3 µm 4.6x75mm	50
5020-89224	InertSustain Phenylhexyl HP 3 µm 4.6x100mm	50
5020-89225	InertSustain Phenylhexyl HP 3 µm 4.6x150mm	50
5020-89226	InertSustain Phenylhexyl HP 3 µm 4.6x250mm	50

\* End-fittings are 1/16" Waters-compatible.

## InertSustain Phenylhexyl HPLC Columns

### Analytical Columns

Cat#	Description	Max. Operating Pressure (MPa)
5020-89160	InertSustain Phenylhexyl 3 µm 1.0x30mm	20
5020-89161	InertSustain Phenylhexyl 3 µm 1.0x50mm	20
5020-89162	InertSustain Phenylhexyl 3 µm 1.0x75mm	20
5020-89163	InertSustain Phenylhexyl 3 µm 1.0x100mm	20
5020-89164	InertSustain Phenylhexyl 3 µm 1.0x150mm	20
5020-89165	InertSustain Phenylhexyl 3 µm 1.0x250mm	20
5020-89166	InertSustain Phenylhexyl 3 µm 1.5x30mm	20
5020-89167	InertSustain Phenylhexyl 3 µm 1.5x50mm	20
5020-89168	InertSustain Phenylhexyl 3 µm 1.5x75mm	20
5020-89169	InertSustain Phenylhexyl 3 µm 1.5x100mm	20
5020-89170	InertSustain Phenylhexyl 3 µm 1.5x150mm	20
5020-89171	InertSustain Phenylhexyl 3 µm 1.5x250mm	20
5020-89124	InertSustain Phenylhexyl 3 µm 2.1x30mm	20
5020-89125	InertSustain Phenylhexyl 3 µm 2.1x50mm	20
5020-89126	InertSustain Phenylhexyl 3 µm 2.1x75mm	20
5020-89127	InertSustain Phenylhexyl 3 µm 2.1x100mm	20
5020-89128	InertSustain Phenylhexyl 3 µm 2.1x150mm	20
5020-89129	InertSustain Phenylhexyl 3 µm 2.1x250mm	20
5020-89131	InertSustain Phenylhexyl 3 µm 3.0x30mm	20
5020-89132	InertSustain Phenylhexyl 3 µm 3.0x50mm	20
5020-89133	InertSustain Phenylhexyl 3 µm 3.0x75mm	20
5020-89134	InertSustain Phenylhexyl 3 µm 3.0x100mm	20
5020-89135	InertSustain Phenylhexyl 3 µm 3.0x150mm	20
5020-89136	InertSustain Phenylhexyl 3 µm 3.0x250mm	20
5020-89138	InertSustain Phenylhexyl 3 µm 4.0x30mm	20
5020-89139	InertSustain Phenylhexyl 3 µm 4.0x50mm	20
5020-89140	InertSustain Phenylhexyl 3 µm 4.0x75mm	20
5020-89141	InertSustain Phenylhexyl 3 µm 4.0x100mm	20
5020-89142	InertSustain Phenylhexyl 3 µm 4.0x150mm	20
5020-89143	InertSustain Phenylhexyl 3 µm 4.0x250mm	20
5020-89145	InertSustain Phenylhexyl 3 µm 4.6x30mm	20
5020-89146	InertSustain Phenylhexyl 3 µm 4.6x50mm	20
5020-89147	InertSustain Phenylhexyl 3 µm 4.6x75mm	20
5020-89148	InertSustain Phenylhexyl 3 µm 4.6x100mm	20
5020-89149	InertSustain Phenylhexyl 3 µm 4.6x150mm	20
5020-89150	InertSustain Phenylhexyl 3 µm 4.6x250mm	20

\* End-fittings are 1/16" Waters-compatible.

## InertSustain Phenylhexyl HPLC Columns

### Analytical Columns

Cat#	Description	Max. Operating Pressure (MPa)
5020-89038	InertSustain Phenylhexyl 5 µm 1.0x30mm	20
5020-89039	InertSustain Phenylhexyl 5 µm 1.0x50mm	20
5020-89040	InertSustain Phenylhexyl 5 µm 1.0x75mm	20
5020-89041	InertSustain Phenylhexyl 5 µm 1.0x100mm	20
5020-89042	InertSustain Phenylhexyl 5 µm 1.0x150mm	20
5020-89043	InertSustain Phenylhexyl 5 µm 1.0x250mm	20
5020-89044	InertSustain Phenylhexyl 5 µm 1.5x30mm	20
5020-89045	InertSustain Phenylhexyl 5 µm 1.5x50mm	20
5020-89046	InertSustain Phenylhexyl 5 µm 1.5x75mm	20
5020-89047	InertSustain Phenylhexyl 5 µm 1.5x100mm	20
5020-89048	InertSustain Phenylhexyl 5 µm 1.5x150mm	20
5020-89049	InertSustain Phenylhexyl 5 µm 1.5x250mm	20
5020-89001	InertSustain Phenylhexyl 5 µm 2.1x30mm	20
5020-89002	InertSustain Phenylhexyl 5 µm 2.1x50mm	20
5020-89003	InertSustain Phenylhexyl 5 µm 2.1x75mm	20
5020-89004	InertSustain Phenylhexyl 5 µm 2.1x100mm	20
5020-89005	InertSustain Phenylhexyl 5 µm 2.1x150mm	20
5020-89006	InertSustain Phenylhexyl 5 µm 2.1x250mm	20
5020-89008	InertSustain Phenylhexyl 5 µm 3.0x30mm	20
5020-89009	InertSustain Phenylhexyl 5 µm 3.0x50mm	20
5020-89010	InertSustain Phenylhexyl 5 µm 3.0x75mm	20
5020-89011	InertSustain Phenylhexyl 5 µm 3.0x100mm	20
5020-89012	InertSustain Phenylhexyl 5 µm 3.0x150mm	20
5020-89013	InertSustain Phenylhexyl 5 µm 3.0x250mm	20
5020-89015	InertSustain Phenylhexyl 5 µm 4.0x30mm	20
5020-89016	InertSustain Phenylhexyl 5 µm 4.0x50mm	20
5020-89017	InertSustain Phenylhexyl 5 µm 4.0x75mm	20
5020-89018	InertSustain Phenylhexyl 5 µm 4.0x100mm	20
5020-89019	InertSustain Phenylhexyl 5 µm 4.0x150mm	20
5020-89020	InertSustain Phenylhexyl 5 µm 4.0x250mm	20
5020-89022	InertSustain Phenylhexyl 5 µm 4.6x30mm	20
5020-89023	InertSustain Phenylhexyl 5 µm 4.6x50mm	20
5020-89024	InertSustain Phenylhexyl 5 µm 4.6x75mm	20
5020-89025	InertSustain Phenylhexyl 5 µm 4.6x100mm	20
5020-89026	InertSustain Phenylhexyl 5 µm 4.6x150mm	20
5020-89027	InertSustain Phenylhexyl 5 µm 4.6x250mm	20

\* End-fittings are 1/16" Waters-compatible.

## InertSustain Phenylhexyl HPLC Columns

### Guard Columns for UHPLC

Cat#	Description	Max. Operating Pressure (MPa)
5020-08630	Holder for Guard Columns for UHPLC	-
5020-89230	Guard Columns for UHPLC, Holder/Cartridge Set, 1 Holder with 2 pcs 1.5x10 mm Cartridges, InertSustain Phenylhexyl 3 µm	80
5020-89231	Guard Columns for UHPLC, Holder/Cartridge Set, 1 Holder with 2 pcs 2.1x10 mm Cartridges, InertSustain Phenylhexyl 3 µm	80
5020-89232	Guard Columns for UHPLC, Holder/Cartridge Set, 1 Holder with 2 pcs 3.0x10 mm Cartridges, InertSustain Phenylhexyl 3 µm	80
5020-89227	Guard Columns for UHPLC, 1.5x10 mm, 2 pcs, InertSustain Phenylhexyl 3 µm	80
5020-89228	Guard Columns for UHPLC, 2.1x10 mm, 2 pcs, InertSustain Phenylhexyl 3 µm	80
5020-89229	Guard Columns for UHPLC, 3.0x10 mm, InertSustain Phenylhexyl 3 µm	80

### Cartridge Guard Column Ei (Non-Metal)

Cat#	Description	Max. Operating Pressure (MPa)
5020-08650	Holder for 10 mm, Cartridge Guard Column Ei	-
5020-89120	Cartridge Ei Holder/Cartridge Set, 1 Holder with 2 pcs 1.0x10 mm, InertSustain Phenylhexyl 5 µm	20
5020-89118	Cartridge Ei Holder/Cartridge Set, 1 Holder with 2 pcs 2.1x10 mm, InertSustain Phenylhexyl 5 µm	20
5020-89116	Cartridge Ei Holder/Cartridge Set, 1 Holder with 2 pcs 3.0x10 mm, InertSustain Phenylhexyl 5 µm	20
5020-89114	Cartridge Ei Holder/Cartridge Set, 1 Holder with 2 pcs 4.0x10 mm, InertSustain Phenylhexyl 5 µm	20
5020-89119	Cartridge Ei Replacement Cartridges, 2 pcs 1.0x10 mm, InertSustain Phenylhexyl 5 µm	20
5020-89117	Cartridge Ei Replacement Cartridges, 2 pcs 2.1x10 mm, InertSustain Phenylhexyl 5 µm	20
5020-89115	Cartridge Ei Replacement Cartridges, 2 pcs 3.0x10 mm, InertSustain Phenylhexyl 5 µm	20
5020-89113	Cartridge Ei Replacement Cartridges, 2 pcs 4.0x10 mm, InertSustain Phenylhexyl 5 µm	20

\* End-fittings are 1/16" Waters-compatible.

## InertSustain Phenylhexyl HPLC Columns

### Cartridge Guard Column E

Cat#	Description	Max. Operating Pressure (MPa)
5020-08500	Holder for 10 mm, Cartridge Guard Column E	-
5020-08550	Holder for 20 mm, Cartridge Guard Column E	-
5020-89200	Cartridge E Holder/Cartridge Set, 1 Holder with 2 pcs 1.0x10 mm Cartridges, InertSustain Phenylhexyl 3 µm	20
5020-89202	Cartridge E Holder/Cartridge Set, 1 Holder with 2 pcs 1.5x10 mm Cartridges, InertSustain Phenylhexyl 3 µm	20
5020-89198	Cartridge E Holder/Cartridge Set, 1 Holder with 2 pcs 3.0x10 mm Cartridges, InertSustain Phenylhexyl 3 µm	20
5020-89196	Cartridge E Holder/Cartridge Set, 1 Holder with 2 pcs 4.0x10 mm Cartridges, InertSustain Phenylhexyl 3 µm	20
5020-89206	Cartridge E Holder/Cartridge Set, 1 Holder with 2 pcs 3.0x20 mm Cartridges, InertSustain Phenylhexyl 3 µm	20
5020-89204	Cartridge E Holder/Cartridge Set, 1 Holder with 2 pcs 4.0x20 mm Cartridges, InertSustain Phenylhexyl 3 µm	20
5020-89106	Cartridge E Holder/Cartridge Set, 1 Holder with 2 pcs 1.0x10 mm Cartridges, InertSustain Phenylhexyl 5 µm	20
5020-89108	Cartridge E Holder/Cartridge Set, 1 Holder with 2 pcs 1.5x10 mm Cartridges, InertSustain Phenylhexyl 5 µm	20
5020-89104	Cartridge E Holder/Cartridge Set, 1 Holder with 2 pcs 3.0x10 mm Cartridges, InertSustain Phenylhexyl 5 µm	20
5020-89102	Cartridge E Holder/Cartridge Set, 1 Holder with 2 pcs 4.0x10 mm Cartridges, InertSustain Phenylhexyl 5 µm	20
5020-89112	Cartridge E Holder/Cartridge Set, 1 Holder with 2 pcs 3.0x20 mm Cartridges, InertSustain Phenylhexyl 5 µm	20
5020-89110	Cartridge E Holder/Cartridge Set, 1 Holder with 2 pcs 4.0x20 mm Cartridges, InertSustain Phenylhexyl 5 µm	20
5020-89199	Cartridge E Replacement Cartridges, 2 pcs 1.0x10mm, InertSustain Phenylhexyl 3 µm	20
5020-89201	Cartridge E Replacement Cartridges, 2 pcs 1.5x10mm, InertSustain Phenylhexyl 3 µm	20
5020-89197	Cartridge E Replacement Cartridges, 2 pcs 3.0x10mm, InertSustain Phenylhexyl 3 µm	20
5020-89195	Cartridge E Replacement Cartridges, 2 pcs 4.0x10mm, InertSustain Phenylhexyl 3 µm	20
5020-89205	Cartridge E Replacement Cartridges, 2 pcs 3.0x20mm, InertSustain Phenylhexyl 3 µm	20
5020-89203	Cartridge E Replacement Cartridges, 2 pcs 4.0x20mm, InertSustain Phenylhexyl 3 µm	20
5020-89105	Cartridge E Replacement Cartridges, 2 pcs 1.0x10mm, InertSustain Phenylhexyl 5 µm	20
5020-89107	Cartridge E Replacement Cartridges, 2 pcs 1.5x10mm, InertSustain Phenylhexyl 5 µm	20
5020-89103	Cartridge E Replacement Cartridges, 2 pcs 3.0x10mm, InertSustain Phenylhexyl 5 µm	20
5020-89101	Cartridge E Replacement Cartridges, 2 pcs 4.0x10mm, InertSustain Phenylhexyl 5 µm	20
5020-89111	Cartridge E Replacement Cartridges, 2 pcs 3.0x20mm, InertSustain Phenylhexyl 5 µm	20
5020-89109	Cartridge E Replacement Cartridges, 2 pcs 4.0x20mm, InertSustain Phenylhexyl 5 µm	20

\* End-fittings are 1/16" Waters-compatible.



## GL Cart Guard Column

Cat#	Description	Max. Operating Pressure (MPa)
5020-08710	Holder for GL Cart Multipurpose Type	-
5020-89208	GL Cart Holder/Cartridge Set, 1 Holder with 5 pcs Cartridges, InertSustain Phenylhexyl 3 µm	20
5020-89207	GL Cart Replacement Cartridges, 10 pcs 4.6x5 mm, InertSustain Phenylhexyl 3 µm	20
5020-89122	GL Cart Holder/Cartridge Set, 1 Holder with 5 pcs Cartridges, InertSustain Phenylhexyl 5 µm	20
5020-89121	GL Cart Replacement Cartridges, 10 pcs 4.6x5 mm, InertSustain Phenylhexyl 5 µm	20

\* End-fittings are 1/16" Waters-compatible.

## Conventional Guard Column

Cat#	Description	Max. Operating Pressure (MPa)
5020-89175	Guard Column 1.0X33mm InertSustain Phenylhexyl 3 µm	20
5020-89173	Guard Column 1.0X50mm InertSustain Phenylhexyl 3 µm	20
5020-89174	Guard Column 1.5X33mm InertSustain Phenylhexyl 3 µm	20
5020-89172	Guard Column 1.5X50mm InertSustain Phenylhexyl 3 µm	20
5020-89159	Guard Column 2.1X33mm InertSustain Phenylhexyl 3 µm	20
5020-89154	Guard Column 2.1X50mm InertSustain Phenylhexyl 3 µm	20
5020-89158	Guard Column 3.0X33mm InertSustain Phenylhexyl 3 µm	20
5020-89153	Guard Column 3.0X50mm InertSustain Phenylhexyl 3 µm	20
5020-89155	Guard Column 4.0X10mm InertSustain Phenylhexyl 3 µm	20
5020-89157	Guard Column 4.0X33mm InertSustain Phenylhexyl 3 µm	20
5020-89152	Guard Column 4.0X50mm InertSustain Phenylhexyl 3 µm	20
5020-89156	Guard Column 4.6X33mm InertSustain Phenylhexyl 3 µm	20
5020-89151	Guard Column 4.6X50mm InertSustain Phenylhexyl 3 µm	20
5020-89053	Guard Column 1.0X33mm InertSustain Phenylhexyl 5 µm	20
5020-89051	Guard Column 1.0X50mm InertSustain Phenylhexyl 5 µm	20
5020-89052	Guard Column 1.5X33mm InertSustain Phenylhexyl 5 µm	20
5020-89050	Guard Column 1.5X50mm InertSustain Phenylhexyl 5 µm	20
5020-89037	Guard Column 2.1X33mm InertSustain Phenylhexyl 5 µm	20
5020-89032	Guard Column 2.1X50mm InertSustain Phenylhexyl 5 µm	20
5020-89036	Guard Column 3.0X33mm InertSustain Phenylhexyl 5 µm	20
5020-89031	Guard Column 3.0X50mm InertSustain Phenylhexyl 5 µm	20
5020-89033	Guard Column 4.0X10mm InertSustain Phenylhexyl 5 µm	20
5020-89035	Guard Column 4.0X33mm InertSustain Phenylhexyl 5 µm	20
5020-89030	Guard Column 4.0X50mm InertSustain Phenylhexyl 5 µm	20
5020-89034	Guard Column 4.6X33mm InertSustain Phenylhexyl 5 µm	20
5020-89029	Guard Column 4.6X50mm InertSustain Phenylhexyl 5 µm	20

\* End-fittings are 1/16" Waters-compatible.

## InertSustain Phenylhexyl HPLC Columns

### Preparative Columns

Cat#	Description	Max. Operating Pressure (MPa)
5020-89054	InertSustain Phenylhexyl 5 µm 6.0x50mm	20
5020-89055	InertSustain Phenylhexyl 5 µm 6.0x100mm	20
5020-89056	InertSustain Phenylhexyl 5 µm 6.0x150mm	20
5020-89057	InertSustain Phenylhexyl 5 µm 6.0x250mm	20
5020-89058	InertSustain Phenylhexyl 5 µm 7.6x50mm	20
5020-89059	InertSustain Phenylhexyl 5 µm 7.6x100mm	20
5020-89060	InertSustain Phenylhexyl 5 µm 7.6x150mm	20
5020-89061	InertSustain Phenylhexyl 5 µm 7.6x250mm	20
5020-89062	InertSustain Phenylhexyl 5 µm 10x50mm	20
5020-89063	InertSustain Phenylhexyl 5 µm 10x100mm	20
5020-89064	InertSustain Phenylhexyl 5 µm 10x150mm	20
5020-89065	InertSustain Phenylhexyl 5 µm 10x250mm	20
5020-89066	InertSustain Phenylhexyl 5 µm 14x50mm	20
5020-89067	InertSustain Phenylhexyl 5 µm 14x100mm	20
5020-89068	InertSustain Phenylhexyl 5 µm 14x150mm	20
5020-89069	InertSustain Phenylhexyl 5 µm 14x250mm	20
5020-89070	InertSustain Phenylhexyl 5 µm 20x50mm	20
5020-89071	InertSustain Phenylhexyl 5 µm 20x100mm	20
5020-89072	InertSustain Phenylhexyl 5 µm 20x150mm	20
5020-89073	InertSustain Phenylhexyl 5 µm 20x250mm	20

\* End-fittings are 1/16" Waters-compatible.

### Guard Columns for Preparative Columns

Cat#	Description	Max. Operating Pressure (MPa)
5020-89074	InertSustain Phenylhexyl 5 µm 6.0x50mm Guard	20
5020-89074	InertSustain Phenylhexyl 5 µm 7.6x50mm Guard	20
5020-89074	InertSustain Phenylhexyl 5 µm 10x50mm Guard	20
5020-89074	InertSustain Phenylhexyl 5 µm 14x50mm Guard	20
5020-89074	InertSustain Phenylhexyl 5 µm 20x50mm Guard	20

\* End-fittings are 1/16" Waters-compatible.

### Cartridge Guard Columns for Preparative Columns

Cat#	Description	Max. Operating Pressure (MPa)
5020-06920	Holder for Prep Guard Cartridge	-
5020-89079	Prep Guard Cartridges, 2 pcs 7.6x30 mm, InertSustain Phenylhexyl 5 µm	20
5020-89080	Prep Guard Holder/Cartridge Set, 1 Holder with 2 pcs 7.6x30 mm Cartridges, InertSustain Phenylhexyl 5 µm	20

\* End-fittings are 1/16" Waters-compatible.

## Capillary Columns

Cat#	Description	Max. Operating Pressure (MPa)
5020-89183	Capillary EX-NANO 0.05X50mm InertSustain Phenylhexyl 3 µm	15
5020-89184	Capillary EX-NANO 0.05X150mm InertSustain Phenylhexyl 3 µm	15
5020-89185	Capillary EX-NANO 0.05X250mm InertSustain Phenylhexyl 3 µm	15
5020-89186	Capillary EX-NANO 0.075X50mm InertSustain Phenylhexyl 3 µm	15
5020-89187	Capillary EX-NANO 0.075X150mm InertSustain Phenylhexyl 3 µm	15
5020-89190	Capillary EX-NANO 0.1X150mm InertSustain Phenylhexyl 3 µm	15
5020-89191	Capillary EX-NANO 0.1X250mm InertSustain Phenylhexyl 3 µm	15
5020-89192	Capillary EX-NANO 0.2X50mm InertSustain Phenylhexyl 3 µm	15
5020-89193	Capillary EX-NANO 0.2X150mm InertSustain Phenylhexyl 3 µm	15
5020-89194	Capillary EX-NANO 0.2X250mm InertSustain Phenylhexyl 3 µm	15
5020-89176	Capillary EX 0.3X50mm InertSustain Phenylhexyl 3 µm	20
5020-89177	Capillary EX 0.3X150mm InertSustain Phenylhexyl 3 µm	20
5020-89178	Capillary EX 0.5X50mm InertSustain Phenylhexyl 3 µm	20
5020-89179	Capillary EX 0.5X150mm InertSustain Phenylhexyl 3 µm	20
5020-89180	Capillary EX 0.7X50mm InertSustain Phenylhexyl 3 µm	20
5020-89181	Capillary EX 0.7X150mm InertSustain Phenylhexyl 3 µm	20
5020-89182	EX Micro Guard (Metal) 0.3X2mm InertSustain Phenylhexyl 3 µm	20
5020-89089	Capillary EX-NANO 0.05x50mm InertSustain Phenylhexyl 5 µm	15
5020-89090	Capillary EX-NANO 0.05x150mm InertSustain Phenylhexyl 5 µm	15
5020-89091	Capillary EX-NANO 0.05x250mm InertSustain Phenylhexyl 5 µm	15
5020-89092	Capillary EX-NANO 0.075x50mm InertSustain Phenylhexyl 5 µm	15
5020-89093	Capillary EX-NANO 0.075x150mm InertSustain Phenylhexyl 5 µm	15
5020-89094	Capillary EX-NANO 0.075x250mm InertSustain Phenylhexyl 5 µm	15
5020-89097	Capillary EX-NANO 0.1x250mm InertSustain Phenylhexyl 5 µm	15
5020-89098	Capillary EX-NANO 0.2x50mm InertSustain Phenylhexyl 5 µm	15
5020-89099	Capillary EX-NANO 0.2x150mm InertSustain Phenylhexyl 5 µm	15
5020-89100	Capillary EX-NANO 0.2x250mm InertSustain Phenylhexyl 5 µm	15
5020-89081	Capillary EX 0.3x50mm InertSustain Phenylhexyl 5 µm	20
5020-89082	Capillary EX 0.3x150mm InertSustain Phenylhexyl 5 µm	20
5020-89083	Capillary EX 0.5x50mm InertSustain Phenylhexyl 5 µm	20
5020-89084	Capillary EX 0.5x150mm InertSustain Phenylhexyl 5 µm	20
5020-89085	Capillary EX 0.7x50mm InertSustain Phenylhexyl 5 µm	20
5020-89086	Capillary EX 0.7x150mm InertSustain Phenylhexyl 5 µm	20
5020-89087	EX Micro Guard (Metal) 0.3x2mm InertSustain Phenylhexyl 5 µm	20
5020-89088	EX Micro Guard (Non-Metal) 0.3x2mm InertSustain Phenylhexyl 5 µm	20

\* End-fittings are Valco 1/16" (10-32 UNF).

\* Valco 1/32" (6-40 UNF) end-fittings are available, indicate "1/32" when ordering.

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