InertSustain

GL Sciences

CPS analitica | Calibre SCIENTIFIC

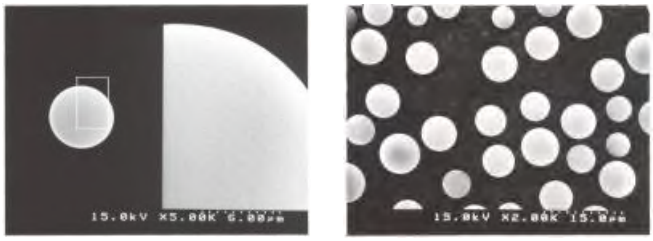
GL Sciences State-of-the-art HPLC Technology

To ensure that our HPLC columns are always of the same quality and consistently supplied worldwide, we conduct all processes such as matrix synthesis, chemical treatment, column packing, and column quality inspections in house.
We evolve continuously based on our accumulated know-how, which enables us to provide better HPLC columns for our customers.

Our High Technological Capability Enables Us to Synthesize Carriers In-house

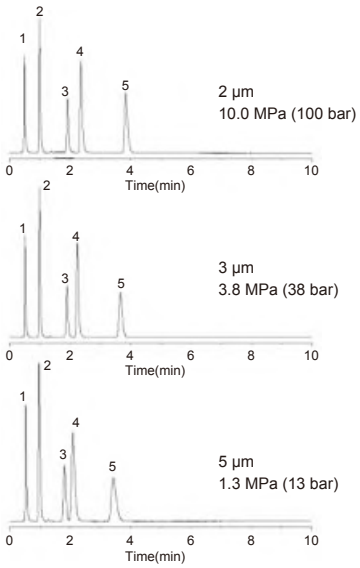
Aside from chemical modification of functional groups and end-cap processing, we also synthesize silica gel, which is a major factor in column performance.

Ultra pure base silica



Reliable Column Performance

The same separation patterns are obtained for different particle sizes.

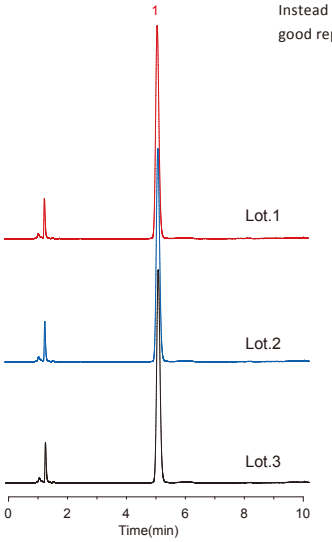


Conditions

Column : InertSustain C18 (50 × 2.1 mm I.D.)
Eluent : A) CH_3OH
B) 25 mM phosphate buffer (pH 7.0)
A/B = 30/70, v/v
Flow Rate : 0.2 mL/min
Col. Temp. : 40 °C
Detection : UV 230 nm
Sample : 1. Uracil
2. Pyridine
3. Phenol
4. Berberine chloride
5. Dextromethorphan

Strong Basic Compound Test

Instead of a difficult compound symmetry peak and good reproducibility are obtained

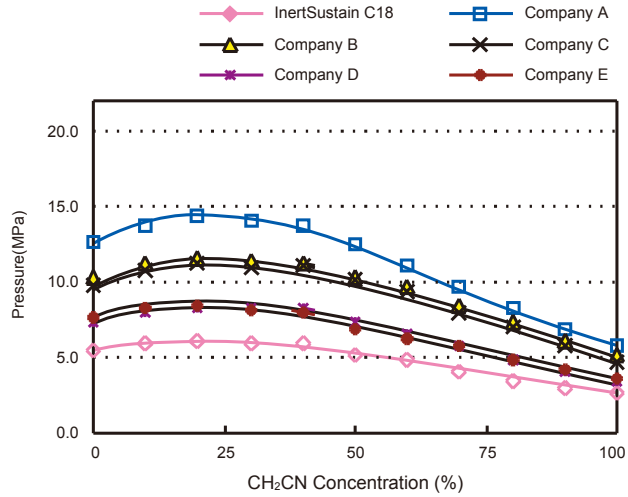


Conditions

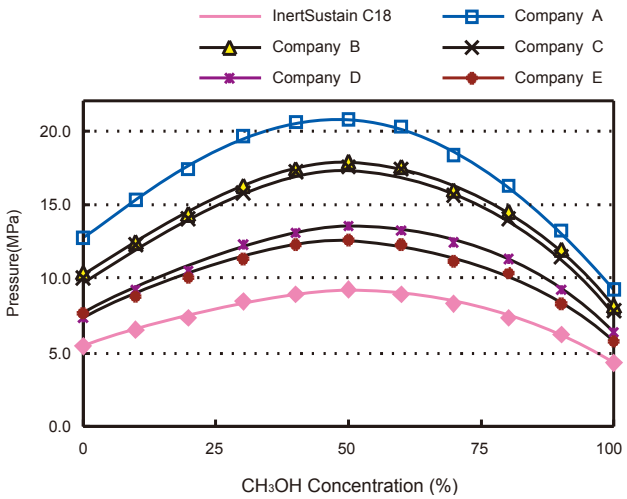
Column : InertSustain C18 (5 µm, 250 × 4.6 mm I.D.)
Eluent : A) CH_3CN
B) 25 mM phosphate buffer (pH 7.0)
A/B = 40/60, v/v
Flow Rate : 1.0 mL/min
Col. Temp. : 40 °C
Detection : UV 220 nm
Sample : 1. Dextromethorphan

Base Silica is Designed to Lower the Column Back Pressure and Hence Reduce the Load on the System

Column : 250 × 4.6 mm I.D. Flow Rate : 1 mL/min Col.Temp. : 40 °C

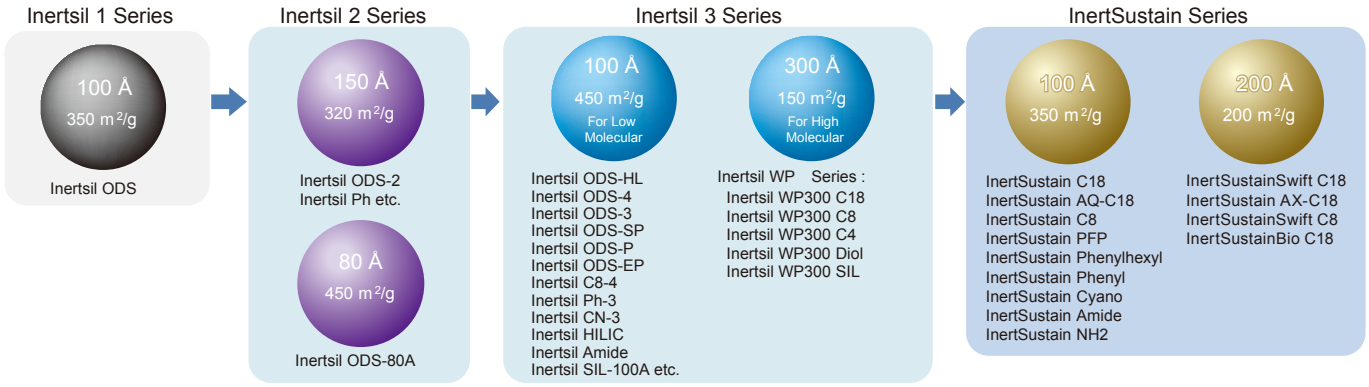


Column : 250 × 4.6 mm I.D. Flow Rate : 1 mL/min Col.Temp. : 40 °C



Evolving HPLC Column Packings

We have been steadily supplying columns from first-generation Inertsil ODS to the latest InertSustain series integrating state-of-the-art technologies, thus establishing an excellent reputation worldwide. The same high-quality, high-performance columns are provided to all customers.



InertSustain Columns are an Evolutionally Surfaced Silica (ES Silica), Which Were Evolved from Inertsil Columns.

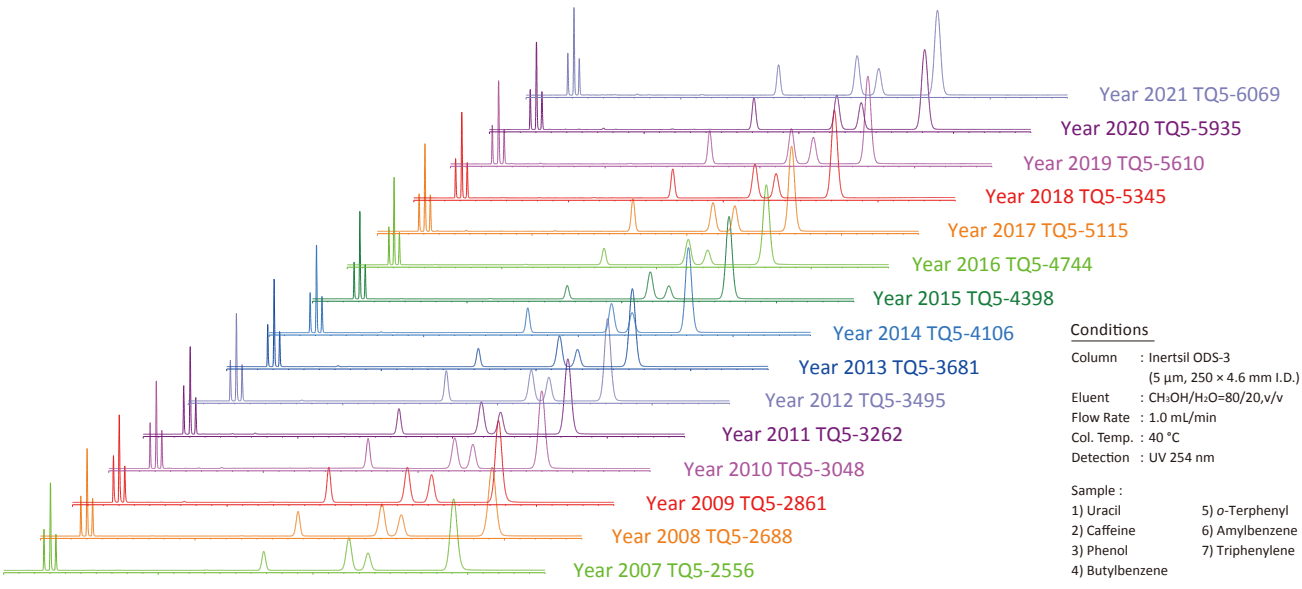
InertSustain columns employ a radically new type of silica with a uniquely modified surface that have a controllable amount of silanols. This state-of-the-art ES silica allows easy surface modification (e.g., endcapping.). The three main advantages of this technology are:

1. Exceptionally improved inertness
2. Robustly bonded phase
3. High lot-to-lot reproducibility

Owing to the above advantages, the InertSustain column is recommended for almost all compounds of interest.

Lot-to-lot Reproducibility

We continue to evolve while maintaining stable supplies with high quality and performance.



QC, ISO

Quality Inspections

- Check the sphericity and surface smoothness of silica-gel with Scanning Electron Microscopy.
- Evaluate the particle size, surface area, pore diameter, pore volume of the base silica gel.
- Tracing of metal impurities on the base silica gel
- Determine the amount of chemical bonding
- Determine the number of residual silanol groups
- Chromatographic test of each lot
- Column performance tests of individual columns

ISO Certification

GL Sciences Fukushima Factory and General Technical Center are ISO14001 - Compliant Facility

Product Ranges:Design & Development, manufacture, stocking and selling of instruments, parts, accessories, columns, packing materials, reagents relating to gas chromatography, liquid chromatography and cells for spectrometry.

GL Sciences Fukushima Factory and R&D Dept. are ISO9001 Compliant Facility

Product Ranges:Design & Development, manufacture, stocking and selling of instruments, parts, accessories, columns, packing materials, reagents relating to gas chromatography, liquid chromatography and cells for spectrometry.

General Technical Center

Fukushima Factory

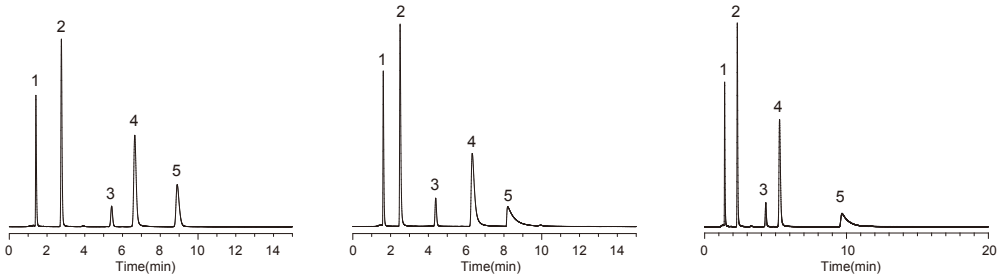
InertSustain C18

- **Base Material** : **High Purity ES Silica Gel**
- **Particle Size** : **2 µm, 3 µm, 5 µm, 10 µm**
- **Surface Area** : **350 m^2/g**
- **Pore Size** : **100 Å (10 nm)**
- **Pore Volume** : **0.85 mL/g**
- **Functional Group** : **Octadecyl**
- **End-capping** : **Yes**
- **Carbon Loading** : **14 %**
- **USP Code** : **L1**
- **pH Range** : **1 - 10**

In general, silica based columns are mechanically stable and highly efficient but cannot be used under alkaline conditions as their residual silanol groups tend to adsorb organic bases. InertSustain C18 employs a radically new type of silica that is uniquely surface-modified for precise control of the silica properties.

InertSustain C18 inherits the advantages of all current Inertsil HPLC columns (e.g., extremely low operating back pressure, superior inertness to almost all analytes, high efficiency, and compatibility with a wide range of solvents) while additionally enabling wide pH analysis with consistent column-to-column and lot-to-lot performance.

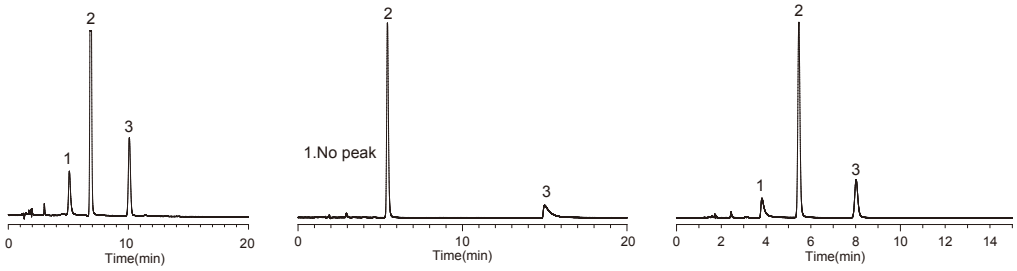
Figure 1 : Basic Compounds



Conditions

Column Size	: 3 µm, 150 × 2.1 mm I.D.
Eluent	: A) CH_3CN
	B) 25 mM K_2HPO_4
	(pH 7.0, KH_2PO_4)
	A/B = 30/70, v/v
Flow Rate	: 0.2 mL/min
Col. Temp.	: 40 °C
Detection	: UV 230 nm
Sample	: 1. Uracil
	2. Pyridine
	3. Phenol
	4. Berberine chloride
	5. Dextromethorphan

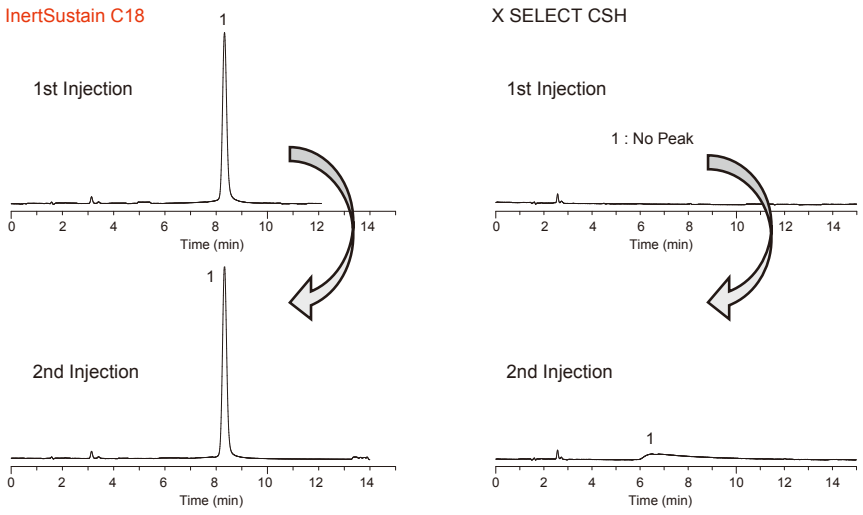
Figure 2 : Acidic Compounds



Conditions

Column Size	: 3 µm, 150 × 2.1 mm I.D.
Eluent	: A) CH_3CN
	B) 0.1 % H_3PO_4
	A/B = 25/75, v/v
Flow Rate	: 0.2 mL/min
Col. Temp.	: 40 °C
Detection	: UV 254 nm
Sample	: 1. Brilliant Blue FCF
	2. Phenol
	3. Salicylic acid

Figure 3 : Chelating Compounds



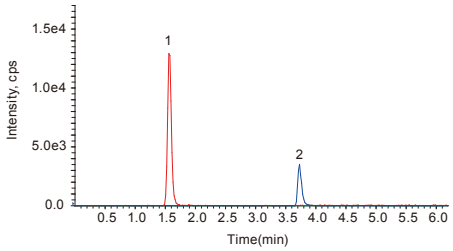
Conditions

Column Size	: 5 µm, 150 × 4.6 mm I. D.
Eluent	: A) CH_3CN
	B) 0.1 % H_3PO_4
	A / B = 40 / 60, v / v
Flow Rate	: 1.0 mL / min
Col. Temp.	: 40 °C
Detection	: UV 254 nm
Sample	: 1. Hinokitiol

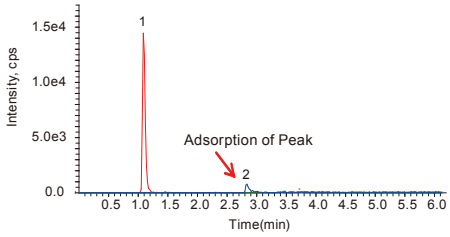
Comparison of Performance to Core-Shell Columns

As shown below, core-shell columns show peak tailing due to the presence of trace metals or silanol groups in their silica gel. Quantitative and qualitative analysis will be a source of concern since the adsorption of compounds can be expected.

InertSustain C18 (3 µm)



Kinetex C18 (1.7 µm)

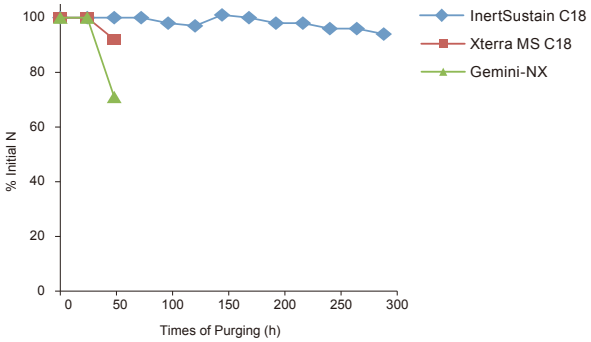


Conditions

Column	:	ODS Column(100 × 2.1 mm I.D.)
Eluent	:	A) 2 mM CH_3COONH_4 in 95 % CH_3CN B) 2 mM CH_3COONH_4 in 10 % CH_3CN A / B = 20 / 80 - 2 min – 100 / 0 - 2.5 min – 100 / 0 - 0.01 min - 20 / 80, v / v (Mixed by a gradient mixer)
Flow Rate	:	0.3 mL / min
Col. Temp.	:	40 °C
Detection	:	LC / MS / MS (4000 QTRAP® : ESI, Positive, MRM)
Injection Vol.	:	10 µL
Sample	:	1. Nitrofurazone (100 µg / L) 2. Lasalocid A (100 µg / L)

Wide pH Compatibility with Long Column Lifetime

As shown in the experiment below, due to the introduction of Evolved Surface Silica, InertSustain C18 maintained high efficiency and peak shape for 300 hours while other “wide pH” column brands failed.



Purging Conditions

Column Size	:	5 µm, 150 × 4.6 mm I.D.
Eluent	:	A) CH_3OH B) 50 mM Triethylamine (pH 10.0) A/B = 30/70, v/v
Flow Rate	:	1.0 mL/min
Col. Temp.	:	50 °C

Analytical Conditions

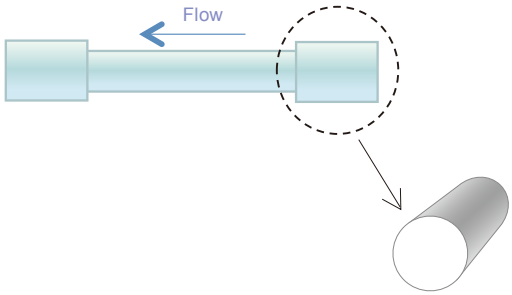
Eluent	:	A) CH_3CN B) H_2O A/B = 65/35, v/v
Flow Rate	:	1.0 mL/min
Col. Temp.	:	40 °C
Detection	:	UV 254 nm
Sample	:	Naphthalene

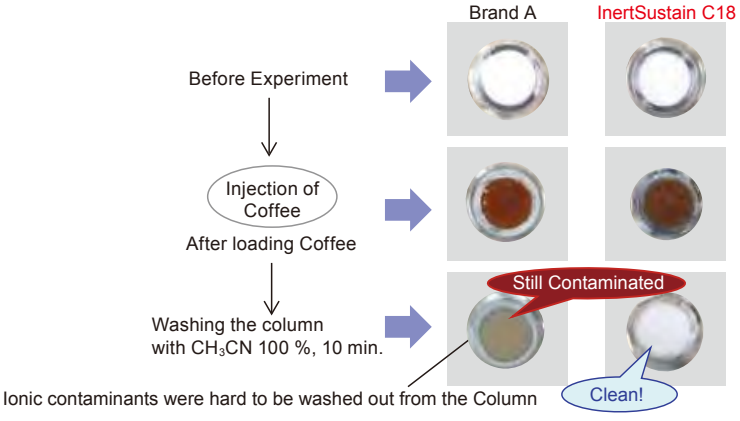
Experience the InertSustain! (Inertness and Sustainability)

Highly end-capped ODS column such as InertSustain C18 offers an opportunity to flush out contaminants from the column surface easily using an organic solvent. Coffee melanoidins are brown heterogeneous polymers contained in coffee. Its components are not clarified yet, but it is considered to contain several ionic compounds, which a poorly end-capped column will adsorb those ionic compounds leading to short column lifetime.

As for ODS column, which is commonly used for HPLC and LC/MS/MS, its inertness has an influence not only on peak shape but also detection sensitivity and durability. It is highly recommended to use highly end-capped column which provides good peak shape for both basic and acidic compounds such as InertSustain C18.

The packing material was visually confirmed by removing the column



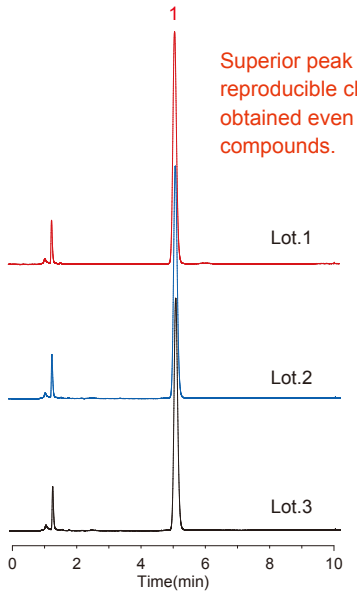


InertSustain C18

Reliable Reproducibility, Performance and Quality

Rigorous quality control of physical properties and strict chromatographic tests for inertness and selectivity, contribute to the production of InertSustain C18 with an outstanding reproducibility and long column lifetime.

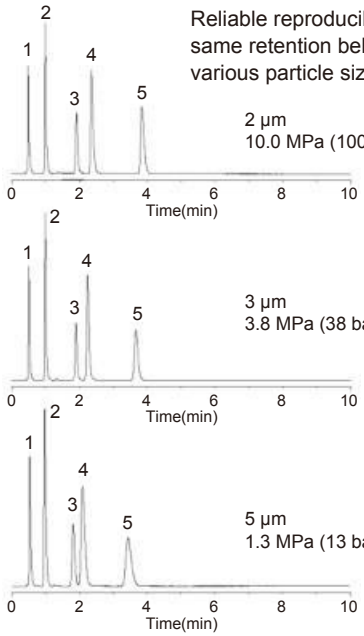
Figure 1 : Strong Basic Compound Test



Conditions

Column Size : 5 µm, 250 × 4.6 mm I.D.
Eluent : A) CH_3CN
B) 25 mM phosphate buffer (pH 7.0)
A / B = 40 / 60, v / v
Flow Rate : 1.0 mL / min
Col. Temp. : 40 °C
Detection : UV 220 nm
Sample : 1. Dextromethorphan

Same Retention Behavior between Various Particle Sizes

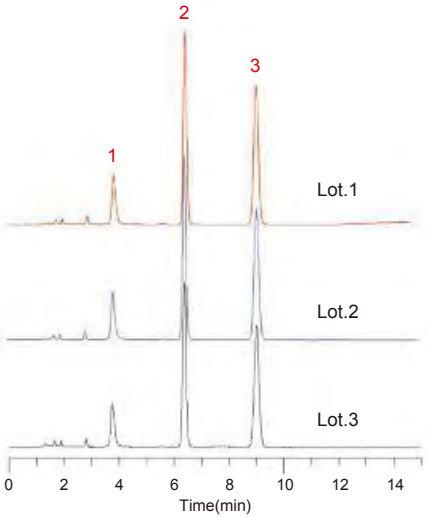


Conditions

Column Size : 50 × 2.1 mm I.D.
Eluent : A) CH_3OH
B) 25 mM phosphate buffer (pH 7.0)
A / B = 30 / 70, v / v
Flow Rate : 0.2 mL / min
Col. Temp. : 40 °C
Detection : UV 230 nm

Sample : 1. Uracil
2. Pyridine
3. Phenol
4. Berberine chloride
5. Dextromethorphan

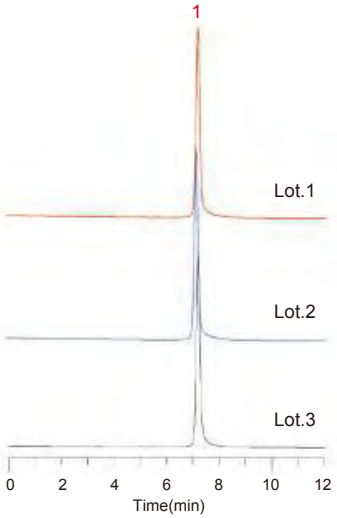
Figure 2 : Strong Acidic Compound Test



Conditions

Column Size : 5 µm, 150 × 4.6 mm I.D.
Eluent : A) CH_3CN
B) 0.1 % H_3PO_4
A / B = 25 / 75, v / v
Flow Rate : 1.0 mL / min
Col. Temp. : 40 °C
Detection : UV 254 nm
Sample : 1. Brilliant Blue FCF
2. Phenol
3. Salicylic acid

Figure 3 : Strong Chelating Compound Test



Conditions

Column Size : 5 µm, 150 × 4.6 mm I.D.
Eluent : A) CH_3CN
B) 0.1 % H_3PO_4
A / B = 40 / 60, v / v
Flow Rate : 1.0 mL / min
Col. Temp. : 40 °C
Detection : UV 254 nm
Sample : 1. Hinokitiol

Analytical Columns

	Length \ I.D. (mm)	2.1	3.0	
Particle Size: 2 µm	30	5020-14351	5020-14361	
	50	5020-14352	5020-14362	
	75	5020-14353	5020-14363	
	100	5020-14354	5020-14364	
	150	5020-14355	5020-14365	

	Length \ I.D. (mm)	2.1	3.0	4.6
HP Series Particle Size: 3 µm 50 MPa (500 bar)	30	5020-14411	5020-14421	5020-14441
	50	5020-14412	5020-14422	5020-14442
	75	5020-14413	5020-14423	5020-14443
	100	5020-14414	5020-14424	5020-14444
	150	5020-14415	5020-14425	5020-14445
	250	5020-14416	5020-14426	5020-14446

	Length \ I.D. (mm)	1.0	1.5		
Particle Size: 3 µm	30	5020-14301	5020-14311		
	50	5020-14302	5020-14312		
	75	5020-14303	5020-14313		
	100	5020-14304	5020-14314		
	150	5020-14305	5020-14315		
	250	5020-14306	5020-14316		
	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-07411	5020-07421	5020-07431	5020-07441
	50	5020-07412	5020-07422	5020-07432	5020-07442
	75	5020-07413	5020-07423	5020-07433	5020-07443
	100	5020-07414	5020-07424	5020-07434	5020-07444
	125	5020-07417	5020-07427	5020-07437	5020-07447
	150	5020-07415	5020-07425	5020-07435	5020-07445
	250	5020-07416	5020-07426	5020-07436	5020-07446

	Length \ I.D. (mm)	1.0	1.5		
Particle Size: 5 µm	30	5020-14201	5020-14211		
	50	5020-14202	5020-14212		
	75	5020-14203	5020-14213		
	100	5020-14204	5020-14214		
	150	5020-14205	5020-14215		
	250	5020-14206	5020-14216		
	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-07311	5020-07321	5020-07331	5020-07341
	50	5020-07312	5020-07322	5020-07332	5020-07342
	75	5020-07313	5020-07323	5020-07333	5020-07343
	100	5020-07314	5020-07324	5020-07334	5020-07344
	125	5020-07317	5020-07327	5020-07337	5020-07348
	150	5020-07315	5020-07325	5020-07335	5020-07345
	250	5020-07316	5020-07326	5020-07336	5020-07346

	Length \ I.D. (mm)	3.9	4.0	4.6
Particle Size: 10 µm	100	-	5020-90557	-
	150	-	5020-90622	5020-90623
	200	-	-	5020-90532
	250	5020-90621	5020-90522	5020-90624
	300	5020-90556	5020-90558	5020-90625

Cartridge Guard Column E

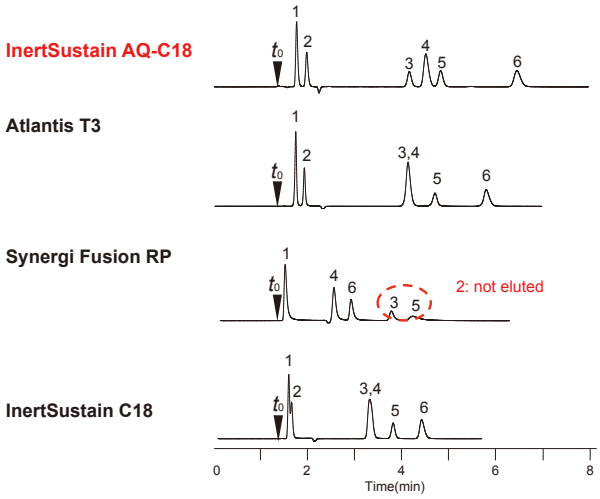
I.D. of the Analytical Column Applicable (mm)	Length (mm)	I.D. (mm)	Replacement Cartridge E Guard Column (2 pcs)			Cartridge E Holder / Cartridge Set (2 Cartridge E Guard Columns & 1 Holder)		
			Particle Size			Particle Size		
			3 µm	5 µm	10 µm	3 µm	5 µm	10 µm
1.0	10	1.0	5020-19250	5020-19249	-	5020-19300	5020-19299	-
1.5, 2.1		1.5	5020-19350	5020-19349	-	5020-19400	5020-19399	-
2.1, 3.0		3.0	5020-19150	5020-19149	-	5020-19200	5020-19199	-
4.0, 4.6		4.0	5020-19050	5020-19049	5020-90626	5020-19100	5020-19099	5020-90627
2.1, 3.0	20	3.0	5020-19550	5020-19549	-	5020-19600	5020-19599	-
4.0, 4.6		4.0	5020-19450	5020-19449	5020-90628	5020-19500	5020-19499	5020-90629
Holder for Cartridge Guard Column E				For 10 mm Length				5020-08500
				For 20 mm Length				5020-08550

InertSustain AQ-C18

- **Base Material** : High Purity ES Silica Gel
- **Particle Size** : 1.9 µm, 3 µm, 5 µm
- **Surface Area** : 350 m^2/g
- **Pore Size** : 100 Å (10 nm)
- **Pore Volume** : 0.85 mL/g
- **Functional Group** : Octadecyl
- **End-capping** : Yes
- **Carbon Loading** : 13%
- **USP Code** : L1, L96
- **pH Range** : 1 - 10

InertSustain AQ-C18 column is designed to achieve strong retention for highly polar compounds, which is the most challenging goal in developing reversed phase methods. The optimization of bonding of the C18 groups at equal distance to the silica gel enables InertSustain AQC18 to offer considerable retention for highly polar compounds even under water-rich mobile phases.

Figure 1 : Superior Retention for Highly Polar Compound



Conditions

Column : 5 µm, 150 × 4.6 mm I.D.
Eluent : 0.1 % HCOOH in H_2O
Flow Rate : 1.0 mL/min
Col. Temp. : 40 °C
Detection : UV 210 nm

Sample :
1. Pyridoxamine (Vitamin B6)
2. Thiamin (Vitamin B1)
3. Nicotinic acid (Vitamin B3)
4. Pyridoxal (Vitamin B6)
5. Nicotinamide (Vitamin B3)
6. Pyridoxine (Vitamin B6)

Figure 2: InertSustain AQ-C18 Provided Strong Retention for all Basic, Neutral and Acidic Compounds under 100% Water Mobile Phase

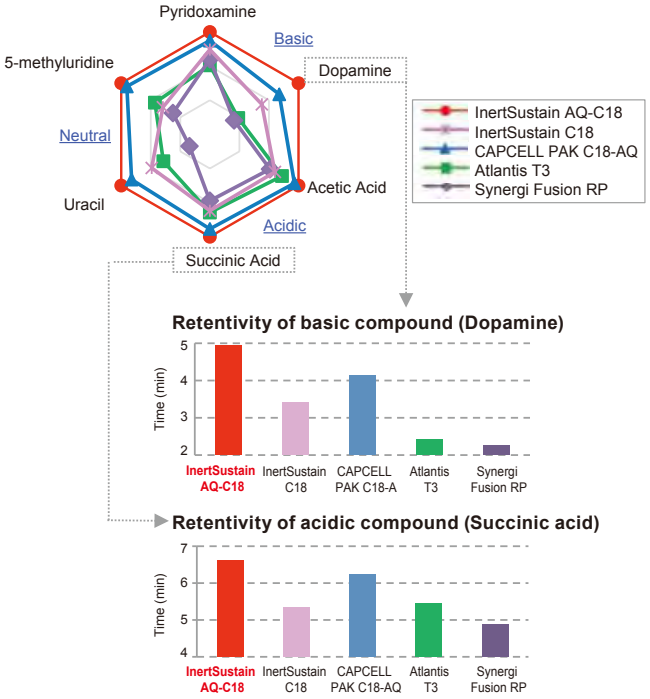
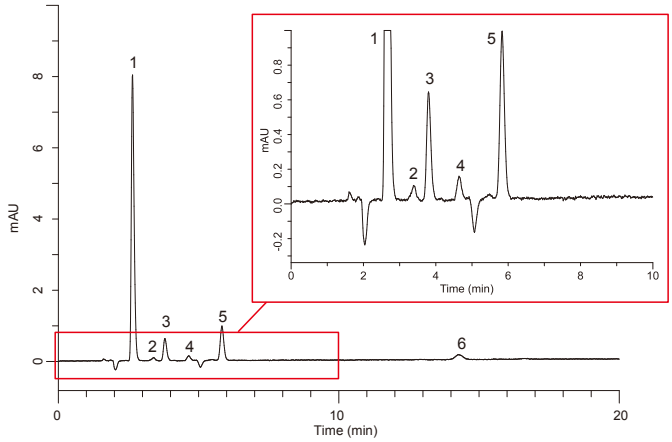


Figure 3 : Analysis of Nucleotide in Fish Meat



Conditions

Column : InertSustain AQ-C18 (5 µm, 150 × 4.6 mm I.D.)
Eluent : 50 mM K_2HPO_4 in H_2O (pH 7.0, H_3PO_4)*
Flow Rate : 1.0 mL/min
Col.Temp. : 40 °C
Detection : UV 260 nm
Injection Vol. : 1 µL

Sample :
1. IMP
2. ATP
3. ADP
4. AMP
5. Hyp
6. Ino

(each 5 mg/L)

* Wash the column with CH_3CN/H_2O=1/1,v/v after the analysis.
When storing the column for a long period of time, store it with 100% CH_3CN 100%.

Analytical Columns

	Length \ I.D. (mm)	2.1	3.0
Particle Size: 1.9 µm	50	5020-89938	5020-89941
	100	5020-89939	5020-89942
	150	5020-89940	5020-89943

	Length \ I.D. (mm)	2.1	3.0	4.6
HP Series Particle Size: 3 µm 50 MPa (500 bar)	30	5020-89920	5020-89926	5020-89932
	50	5020-89921	5020-89927	5020-89933
	75	5020-89922	5020-89928	5020-89934
	100	5020-89923	5020-89929	5020-89935
	150	5020-89924	5020-89930	5020-89936
	250	5020-89925	5020-89931	5020-89937

	Length \ I.D. (mm)	1.0	1.5		
	30	5020-89871	5020-89877		
	50	5020-89872	5020-89878		
	75	5020-89873	5020-89879		
	100	5020-89874	5020-89880		
	150	5020-89875	5020-89881		
	250	5020-89876	5020-89882		
Particle Size: 3 µm	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-89831	5020-89839	5020-89847	5020-89855
	50	5020-89832	5020-89840	5020-89848	5020-89856
	75	5020-89833	5020-89841	5020-89849	5020-89857
	100	5020-89834	5020-89842	5020-89850	5020-89858
	125	5020-89835	5020-89843	5020-89851	5020-89859
	150	5020-89836	5020-89844	5020-89852	5020-89860
	250	5020-89837	5020-89845	5020-89853	5020-89861

	Length \ I.D. (mm)	1.0	1.5		
	30	5020-89741	5020-89747		
	50	5020-89742	5020-89748		
	75	5020-89743	5020-89749		
	100	5020-89744	5020-89750		
	150	5020-89745	5020-89751		
	250	5020-89746	5020-89752		
Particle Size: 5 µm	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-89701	5020-89709	5020-89717	5020-89725
	50	5020-89702	5020-89710	5020-89718	5020-89726
	75	5020-89703	5020-89711	5020-89719	5020-89727
	100	5020-89704	5020-89712	5020-89720	5020-89728
	125	5020-89705	5020-89713	5020-89721	5020-89729
	150	5020-89706	5020-89714	5020-89722	5020-89730
	250	5020-89707	5020-89715	5020-89723	5020-89731

Cartridge Guard Column E

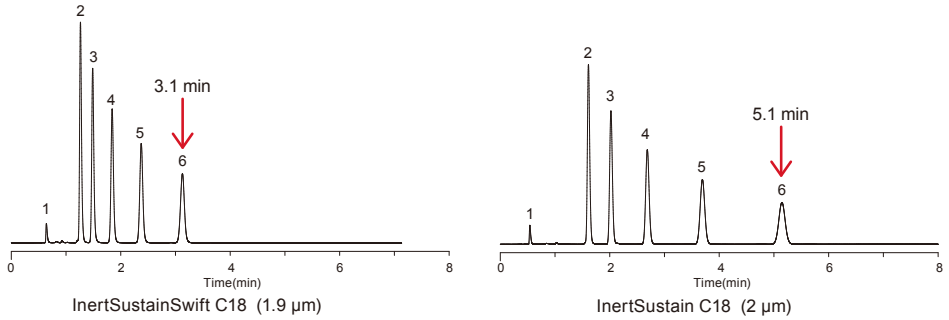
I.D. of the Analytical Column Applicable (mm)	Length (mm)	I.D. (mm)	Replacement Cartridge E Guard Column (2 pcs)			Cartridge E Holder / Cartridge Set (2 Cartridge E Guard Columns & 1 Holder)		
			Particle Size			Particle Size		
			3 µm	5 µm	10 µm	3 µm	5 µm	10 µm
1.0	10	1.0	5020-89910	5020-89808	-	5020-89911	5020-89809	-
1.5, 2.1		1.5	5020-89912	5020-89810	-	5020-89913	5020-89811	-
2.1, 3.0		3.0	5020-89908	5020-89806	-	5020-89909	5020-89807	-
4.0, 4.6		4.0	5020-89906	5020-89804	5020-90626	5020-89907	5020-89805	5020-90627
2.1, 3.0	20	3.0	5020-89916	5020-89814	-	5020-89917	5020-89815	-
4.0, 4.6		4.0	5020-89914	5020-89812	5020-90628	5020-89915	5020-89813	5020-90629
Holder for Cartridge Guard Column E				For 10 mm Length			5020-08500	5020-08500
				For 20 mm Length			5020-08550	5020-08550

InertSustainSwift C18

- **Base Material** : **High Purity ES Silica Gel**
- **Particle Size** : **1.9 µm, 3 µm, 5 µm**
- **Surface Area** : **200 m^2/g**
- **Pore Size** : **200 Å (20 nm)**
- **Pore Volume** : **1.00 mL/g**
- **Functional Group** : **Octadecyl**
- **End-capping** : **Yes**
- **Carbon Loading** : **9.0 %**
- **USP Code** : **L1**
- **pH Range** : **1.0 - 10**

As shown in Figure 1, InertSustainSwift C18 maintains the same extreme inertness and wide pH range, as well as provides rapid separations with symmetric peaks. The optimization of surface area, pore size, and chemical bonding delivers superior peak shapes (Figure 2). Figure 3 proves that InertSustainSwift C18 is also ideal for LC/MS/MS applications, which offers highly sensitive results and enables MS compatible buffers to be used due to the extremely inert silica gel.

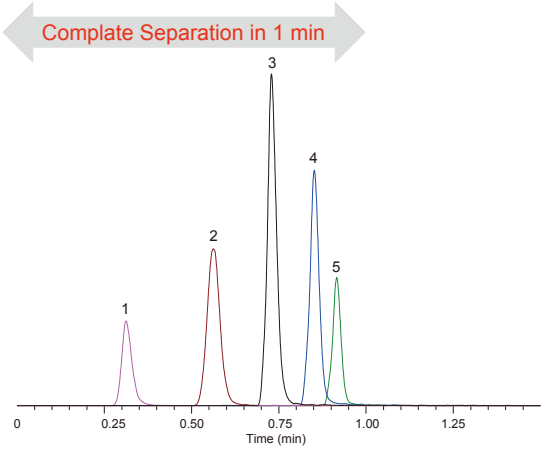
Figure 1 : Comparison of Retentivity



Conditions

Column Size	:	50 × 2.1 mm I.D.
Eluent	:	A) CH_3OH
		B) H_2O
		A/B = 80/20, v/v
Flow Rate	:	0.2 mL/min
Col. Temp.	:	40 °C
Detection	:	UV 254 nm
Sample	:	1. Uracil
		2. Toluene
		3. Ethylbenzene
		4. Propylbenzene
		5. *n*-Butylbenzene
		6. *n*-Amylbenzene

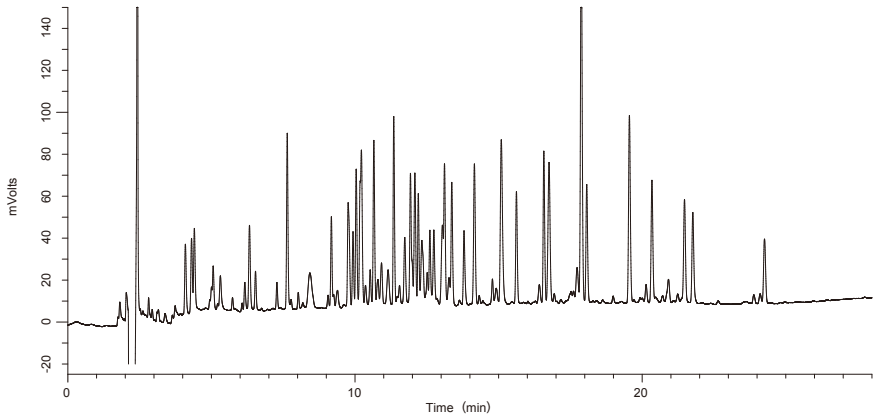
Figure 2 : Rapid LC/MS/MS Analysis of Basic Drugs



Conditions

Column Size	:	InertSustainSwift C18(1.9 µm, 50 × 2.1 mm I.D.)
Eluent	:	A) 10 mM Ammonium Formate in H_2O
		B) 10 mM Ammonium Formate in CH_3OH
		A/B = 70/30 – 0.3 min - 40/60 – 0.5 min
		- 0/100 – 0.1 min – 0/100 – 0.01 min -70/30- 0.5 min - 70/30 ,v/v
Flow Rate	:	0.6 mL/min
Col. Temp.	:	40 °C
Detection	:	LC/MS/MS (ESI, Positive, MRM)
Sample	:	1. Acebutolol
		2. Atenolol
		3. Labetalol
		4. Nadolol
		5. Pindolol

Figure 3 : Analysis of BSA Digests



Conditions

Column Size	: 1.9 µm, 150 × 2.1 mm I.D.
Eluent	: A) 0.1 % TFA in CH_3CN
	B) 0.1 % TFA in H_2O
	A/B = 10/90 - 30 min - 50/50 - 0.1 min - 90/10
	- 5 min - 90/10 - 0.1 min - 10/90 - 15 min
Flow Rate	: 0.2 mL/min
Col. Temp.	: 40 °C
Detection	: UV 210 nm
Injection Vol.	: 10 µL
Sample	: Tryptic Digest of BSA (0.5 mg/mL)

Analytical Columns

Particle Size: 1.9 µm	Length \ I.D. (mm)	2.1	3.0		
	50	5020-88228	5020-88233		
	100	5020-88230	5020-88235		
	150	5020-88231	5020-88236		
HP Series Particle Size: 3 µm 50 MPa (500 bar)	Length \ I.D. (mm)	2.1	3.0	4.6	
	50	5020-88210	5020-88216	5020-88222	
	100	5020-88212	5020-88218	5020-88224	
	150	5020-88213	5020-88219	5020-88225	
	250	5020-88214	5020-88220	5020-88226	
Particle Size: 3 µm	Length \ I.D. (mm)	1.0	1.5		
	30	5020-88160	5020-88166		
	50	5020-88161	5020-88167		
	75	5020-88162	5020-88168		
	100	5020-88163	5020-88169		
	150	5020-88164	5020-88170		
	250	5020-88165	5020-88171		
	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-88124	5020-88131	5020-88138	5020-88145
	50	5020-88125	5020-88132	5020-88139	5020-88146
	75	5020-88126	5020-88133	5020-88140	5020-88147
	100	5020-88127	5020-88134	5020-88141	5020-88148
	125	5020-88253	5020-88254	5020-88255	5020-88256
	150	5020-88128	5020-88135	5020-88142	5020-88149
	250	5020-88129	5020-88136	5020-88143	5020-88150
Particle Size: 5 µm	Length \ I.D. (mm)	1.0	1.5		
	30	5020-88038	5020-88044		
	50	5020-88039	5020-88045		
	75	5020-88040	5020-88046		
	100	5020-88041	5020-88047		
	150	5020-88042	5020-88048		
	250	5020-88043	5020-88049		
	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-88001	5020-88008	5020-88015	5020-88022
	50	5020-88002	5020-88009	5020-88016	5020-88023
	75	5020-88003	5020-88010	5020-88017	5020-88024
	100	5020-88004	5020-88011	5020-88018	5020-88025
	125	5020-88249	5020-88250	5020-88251	5020-88252
	150	5020-88005	5020-88012	5020-88019	5020-88026
	250	5020-88006	5020-88013	5020-88020	5020-88027

Cartridge Guard Column E

I.D. of the Analytical Column Applicable (mm)	Length (mm)	I.D. (mm)	Replacement Cartridge E Guard Column (2 pcs)		Cartridge E Holder / Cartridge Set (2 Cartridge E Guard Columns & 1 Holder)	
			Particle Size		Particle Size	
			3 µm	5 µm	3 µm	5 µm
1.0	10	1.0	5020-88199	5020-88105	5020-88200	5020-88106
1.5, 2.1		1.5	5020-88201	5020-88107	5020-88202	5020-88108
2.1, 3.0		3.0	5020-88197	5020-88103	5020-88198	5020-88104
4.0, 4.6		4.0	5020-88195	5020-88101	5020-88196	5020-88102
2.1, 3.0	20	3.0	5020-88205	5020-88111	5020-88206	5020-88112
4.0, 4.6		4.0	5020-88203	5020-88109	5020-88204	5020-88110
Holder for Cartridge Guard Column E				For 10 mm Length		5020-08500
				For 20 mm Length		5020-08550

InertSustain AX-C18

- **Base Material** : **High Purity ES Silica Gel**
- **Particle Size** : **3 µm, 5 µm**
- **Surface Area** : **200 m^2/g**
- **Pore Size** : **200 Å (20 nm)**
- **Pore Volume** : **1.00 mL/g**
- **Functional Group** : **Octadecyl group + tertiary amino group**
- **End-capping** : **Yes**
- **Carbon Loading** : **8.0 %**
- **USP Code** : **L1, L78**
- **pH Range** : **1 - 9**

InertSustain AX-C18 is a mixed-mode column in which C18 groups and tertiary amino groups are chemically bonded to silica gel. It provides hydrophobic and electrostatic interactions via AX groups. By controlling the quantity of AX groups, acidic compounds can be eluted even over the range of buffer concentrations used in LC/MS, achieving excellent reproducibility and stability.

Figure 1 : Analysis of Nucleobases and Monophosphates

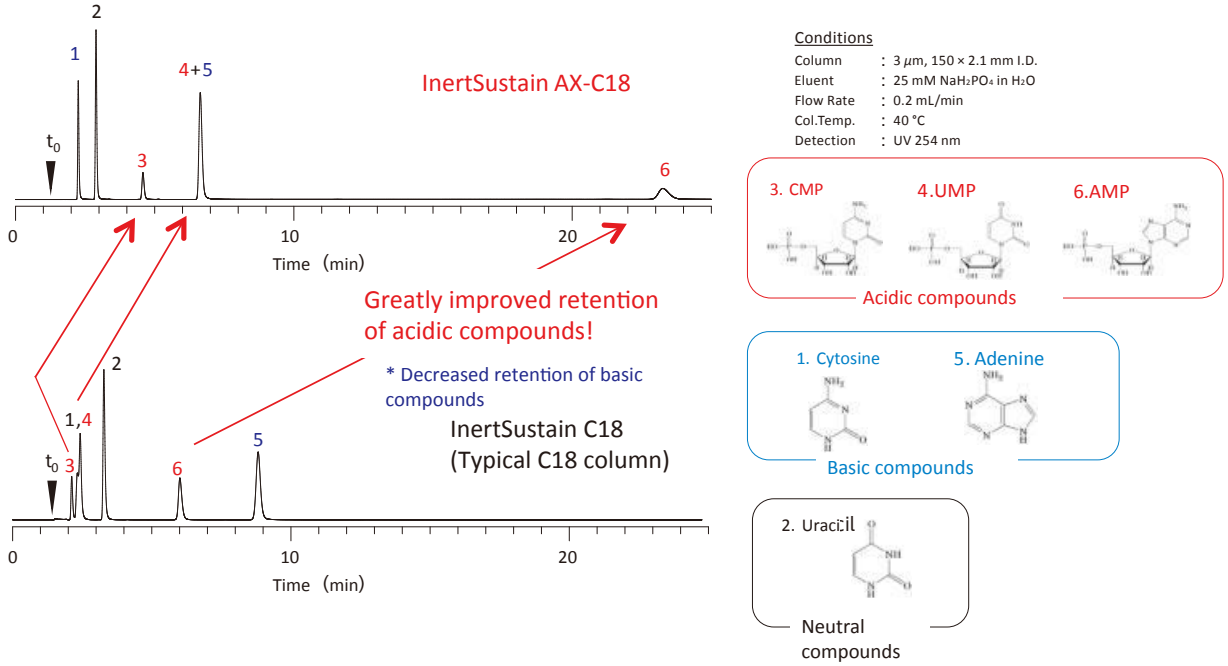
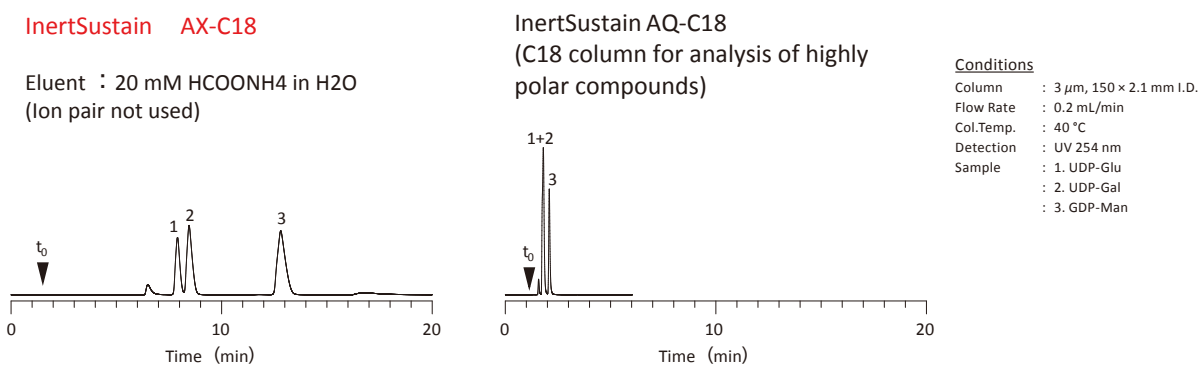


Figure 2 : Analysis of Sugar-nucleotides



Strongly retains highly polar acidic compounds which cannot be retained by InertSustain AQ-C18

Analytical Columns

HP Series Particle size : 3 µm	Length \ I.D. (mm)	2.1	3.0	4.6
	150	5020-91053	5020-91055	5020-91057
	250	5020-91054	5020-91056	5020-91058

Particle size : 3 µm	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	50	5020-91037	5020-91041	5020-91045	5020-91049
	100	5020-91038	5020-91042	5020-91046	5020-91050
	150	5020-91039	5020-91043	5020-91047	5020-91051
	250	5020-91040	5020-91044	5020-91048	5020-91052
Particle size : 5 µm	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	50	5020-91000	5020-91004	5020-91008	5020-91012
	100	5020-91001	5020-91005	5020-91009	5020-91013
	150	5020-91002	5020-91006	5020-91010	5020-91014
	250	5020-91003	5020-91007	5020-91011	5020-91015

Cartridge Guard Column E

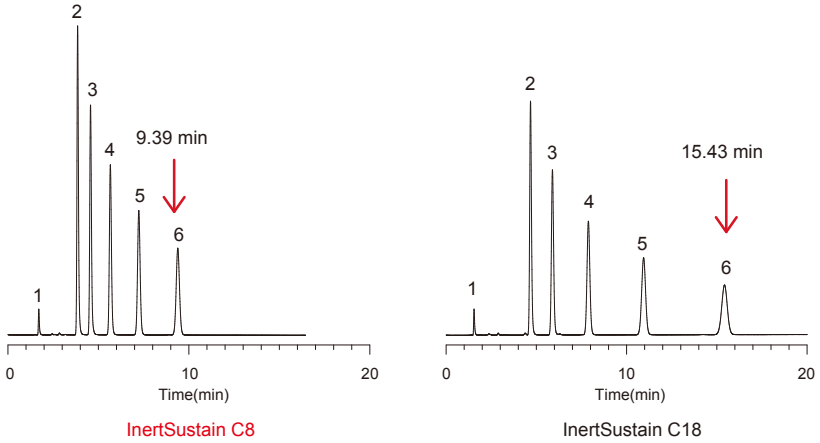
I.D. of the Analytical Column Applicable (mm)	Length (mm)	I.D. (mm)	Replacement Cartridge E Guard Column (2 pcs)		Cartridge E Holder / Cartridge Set (2 Cartridge E Guard Columns & 1 Holder)	
			Particle Size		Particle Size	
			3 µm	5 µm	3 µm	5 µm
1.5、2.1	10	1.5	5020-91076	5020-91029	5020-91077	5020-91030
2.1、3.0		3.0	5020-91074	5020-91027	5020-91075	5020-91028
4.0、4.6		4.0	5020-91072	5020-91025	5020-91073	5020-91026
2.1、3.0	20	3.0	5020-91080	5020-91033	5020-91081	5020-91034
4.0、4.6		4.0	5020-91078	5020-91031	5020-91079	5020-91032
Holder for Cartridge Guard Column E				For 10 mm Length		5020-08500
				For 20 mm Length		5020-08550

InertSustain C8

- **Silica** : **High Purity ES Silica Gel**
- **Particle Size** : **2 µm, 3 µm, 5 µm**
- **Surface Area** : **350 m^2/g**
- **Pore Size** : **100 Å (10 nm)**
- **Pore Volume** : **0.85 mL/g**
- **Functional Group** : **Octyl**
- **End-capping** : **Yes**
- **Carbon Loading** : **8 %**
- **USP Code** : **L7**
- **pH Range** : **1 - 10**

InertSustain C8 is an octyl group (C8) bonded column. Like InertSustain C18, InertSustain C8 is extremely inert to any type of compound, enabling rapid analysis of highly hydrophobic compounds and ensuring symmetric peaks over a wide pH range.

Figure 1 : Comparison of Retentivity

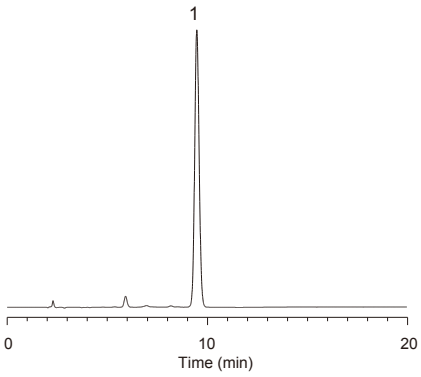


Conditions

Column Size : 5 µm, 150 × 4.6 mm I.D.
Eluent : A) CH_3OH
B) H_2O
A/B = 80/20, v/v
Flow Rate : 1.0 mL/min
Col. Temp. : 40 °C
Detection : UV 254 nm

Sample : 1. Uracil
2. Toluene
3. Ethylbenzene
4. Propylbenzene
5. *n*-Butylbenzene
6. *n*-Amylbenzene

Figure 2 : Analysis of Lincomycin under Basic Condition



Conditions

Column : InertSustain C8 (5 µm, 250 × 4.6 mm I.D.)
Eluent : A) CH_3CN
B) CH_3OH
C) 0.1 % Ammonia solution in H_2O (pH 9.5, H_3PO_4)
A/B/C = 225/225/550, v/v
Flow Rate : 1.2 mL/min
Col. Temp. : 25 °C
Detection : UV 210 nm
Sample : 1. Lincomycin

Analytical Columns

Particle Size: 2 µm	Length \ I.D. (mm)	2.1	3.0		
	30	5020-16235	5020-16240		
	50	5020-16236	5020-16241		
	75	5020-16237	5020-16242		
	100	5020-16238	5020-16243		
	150	5020-16239	5020-16244		
HP Series Particle Size: 3 µm 50 MPa (500 bar)	Length \ I.D. (mm)	2.1	3.0	4.6	
	30	5020-16217	5020-16223	5020-16229	
	50	5020-16218	5020-16224	5020-16230	
	75	5020-16219	5020-16225	5020-16231	
	100	5020-16220	5020-16226	5020-16232	
	150	5020-16221	5020-16227	5020-16233	
	250	5020-16222	5020-16228	5020-16234	

Particle Size: 3 µm	Length \ I.D. (mm)	1.0	1.5		
	30	5020-16168	5020-16174		
	50	5020-16169	5020-16175		
	75	5020-16170	5020-16176		
	100	5020-16171	5020-16177		
	150	5020-16172	5020-16178		
	250	5020-16173	5020-16179		
	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-16132	5020-16139	5020-16146	5020-16153
	50	5020-16133	5020-16140	5020-16147	5020-16154
	75	5020-16134	5020-16141	5020-16148	5020-16155
	100	5020-16135	5020-16142	5020-16149	5020-16156
	125	5020-16855	5020-16856	5020-16857	5020-16858
	150	5020-16136	5020-16143	5020-16150	5020-16157
	250	5020-16137	5020-16144	5020-16151	5020-16158
Particle Size: 5 µm	Length \ I.D. (mm)	1.0	1.5		
	30	5020-16039	5020-16045		
	50	5020-16040	5020-16046		
	75	5020-16041	5020-16047		
	100	5020-16042	5020-16048		
	150	5020-16043	5020-16049		
	250	5020-16044	5020-16050		
	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-16002	5020-16009	5020-16016	5020-16023
	50	5020-16003	5020-16010	5020-16017	5020-16024
	75	5020-16004	5020-16011	5020-16018	5020-16025
	100	5020-16005	5020-16012	5020-16019	5020-16026
	125	5020-16851	5020-16852	5020-16853	5020-16854
	150	5020-16006	5020-16013	5020-16020	5020-16027
	250	5020-16007	5020-16014	5020-16021	5020-16028

Cartridge Guard Column E

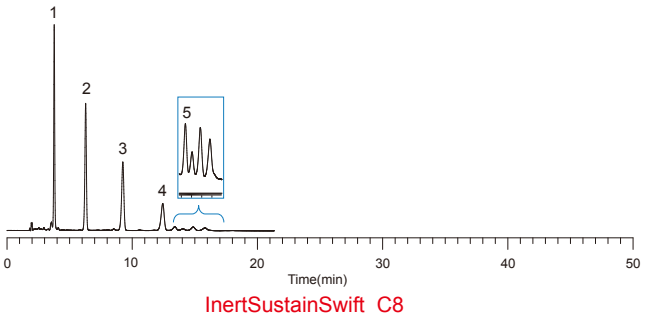
I.D. of the Analytical Column Applicable (mm)	Length (mm)	I.D. (mm)	Replacement Cartridge E Guard Column (2 pcs)		Cartridge E Holder / Cartridge Set (2 Cartridge E Guard Columns & 1 Holder)	
			Particle Size		Particle Size	
			3 µm	5 µm	3 µm	5 µm
1.0	10	1.0	5020-16207	5020-16106	5020-16208	5020-16107
1.5, 2.1		1.5	5020-16209	5020-16108	5020-16210	5020-16109
2.1, 3.0		3.0	5020-16205	5020-16104	5020-16206	5020-16105
4.0, 4.6		4.0	5020-16203	5020-16102	5020-16204	5020-16103
2.1, 3.0	20	3.0	5020-16213	5020-16112	5020-16214	5020-16113
4.0, 4.6		4.0	5020-16211	5020-16110	5020-16212	5020-16111
Holder for Cartridge Guard Column E				For 10 mm Length		5020-08500
				For 20 mm Length		5020-08550

InertSustainSwift C8

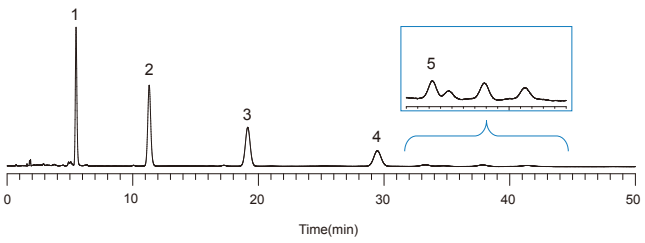
- **Base Material** : **High Purity ES Silica Gel**
- **Particle Size** : **1.9 µm, 3 µm, 5 µm**
- **Surface Area** : **200 m^2/g**
- **Pore Size** : **200 Å (20 nm)**
- **Pore Volume** : **1.00 mL/g**
- **Functional Group** : **Octyl**
- **End-capping** : **Yes**
- **Carbon Loading** : **6%**
- **USP Code** : **L7**
- **pH Range** : **1 - 10**

InertSustainSwift C8 is an octyl group (C8) bonded column. Like InertSustainSwift C18, InertSustainSwift C8 is extremely inert to any type of compound and is ideal for analyzing low-polarity analytes. In addition, the pore size (200 Å) of the silica is optimized for analyzing and retaining peptides and oligonucleotides with molecular weights from several kDa to several dozen kDa.

Figure 1 : Comparison of Retentivity



InertSustainSwift C8

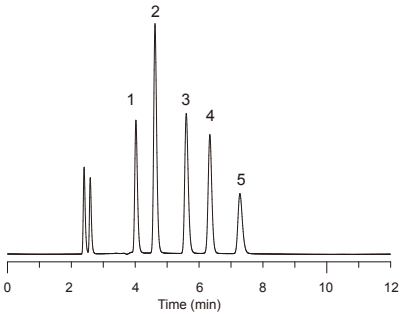


InertSustain C8

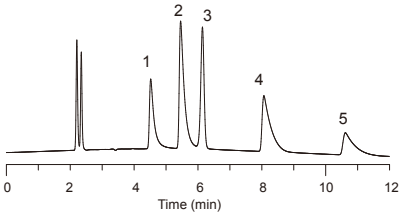
Conditions

Column Size	:	5 µm 150 × 4.6 mm I.D.
Eluent	:	A) H_2O
		B) CH_3CN
		A/B = 10/90,v/v
Flow Rate	:	1.0 mL/min
Col. Temp	:	40 ˚C
Detection	:	UV 300 nm
Sample	:	1. Retinol (Vitamin A)
		2. Cholecalciferol (Vitamin D3)
		3. α-tocopherol (Vitamin E)
		4. Phylloquinone (Vitamin K1)
		5. Impurities of 1

Figure 2 : Analysis of Antihistamines



InertSustainSwift C8



Hypersil BDS C8

Conditions

Column Size	:	5 µm 250 × 4.6 mm I.D.
Eluent	:	A) CH_3CN
		B) 25 mM K_2HPO_4 (pH 7.0, KH_2PO_4)
		A/B = 60/40, v/v
Flow Rate	:	1.0 mL/min
Col. Temp	:	40 °C
Detection	:	230 nm
Injection.Vol.	:	5 µL
Sample	:	1. Chlorpheniramine
		2. Triprolidine
		3. Homochlorcyclizine
		4. Hydroxyzine
		5. Clemastine

Analytical Columns

	Length \ I.D. (mm)	2.1	3.0
Particle Size: 1.9 µm	50	5020-88533	5020-88536
	100	5020-88534	5020-88537
	150	5020-88535	5020-88538

	Length \ I.D. (mm)	2.1	3.0	4.6
HP Series Particle Size: 3 µm 50 MPa (500 bar)	50	5020-88515	5020-88519	5020-88523
	100	5020-88516	5020-88520	5020-88524
	150	5020-88517	5020-88521	5020-88525
	250	5020-88518	5020-88522	5020-88526

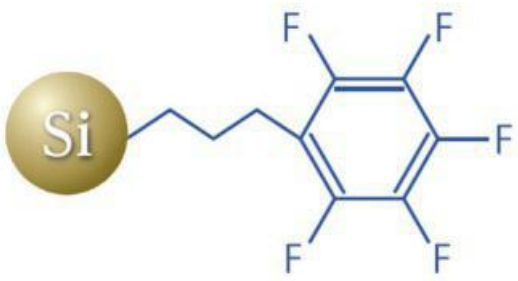
	Length \ I.D. (mm)	1.0	1.5		
Particle Size: 3 µm	30	5020-88466	5020-88472		
	50	5020-88467	5020-88473		
	75	5020-88468	5020-88474		
	100	5020-88469	5020-88475		
	150	5020-88470	5020-88476		
	250	5020-88471	5020-88477		
	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-88426	5020-88434	5020-88442	5020-88450
	50	5020-88427	5020-88435	5020-88443	5020-88451
	75	5020-88428	5020-88436	5020-88444	5020-88452
	100	5020-88429	5020-88437	5020-88445	5020-88453
	125	5020-88430	5020-88438	5020-88446	5020-88454
	150	5020-88431	5020-88439	5020-88447	5020-88455
	250	5020-88432	5020-88440	5020-88448	5020-88456
Particle Size: 5 µm	Length \ I.D. (mm)	1.0	1.5		
	30	5020-88342	5020-88348		
	50	5020-88343	5020-88349		
	75	5020-88344	5020-88350		
	100	5020-88345	5020-88351		
	150	5020-88346	5020-88352		
	250	5020-88347	5020-88353		
	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-88302	5020-88310	5020-88318	5020-88326
	50	5020-88303	5020-88311	5020-88319	5020-88327
	75	5020-88304	5020-88312	5020-88320	5020-88328
	100	5020-88305	5020-88313	5020-88321	5020-88329
	125	5020-88306	5020-88314	5020-88322	5020-88330
	150	5020-88307	5020-88315	5020-88323	5020-88331
	250	5020-88308	5020-88316	5020-88324	5020-88332

Cartridge Guard Column E

I.D. of the Analytical Column Applicable (mm)	Length (mm)	I.D. (mm)	Replacement Cartridge E Guard Column (2 pcs)		Cartridge E Holder / Cartridge Set (2 Cartridge E Guard Columns & 1 Holder)	
			Particle Size		Particle Size	
			3 µm	5 µm	3 µm	5 µm
1.0	10	1.0	5020-88505	5020-88409	5020-88506	5020-88410
1.5, 2.1		1.5	5020-88507	5020-88411	5020-88508	5020-88412
2.1, 3.0		3.0	5020-88503	5020-88407	5020-88504	5020-88408
4.0, 4.6		4.0	5020-88501	5020-88405	5020-88502	5020-88406
2.1, 3.0	20	3.0	5020-88511	5020-88415	5020-88512	5020-88416
4.0, 4.6		4.0	5020-88509	5020-88413	5020-88510	5020-88414
Holder for Cartridge Guard Column E				For 10 mm Length		5020-08500
				For 20 mm Length		5020-08550

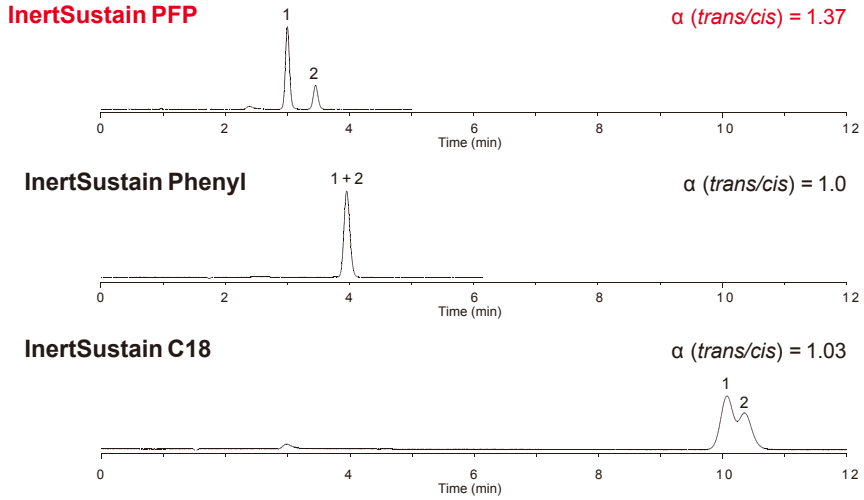
InertSustain PFP

- **Base Material** : **High Purity ES Silica Gel**
- **Particle Size** : **3 µm, 5 µm**
- **Surface Area** : **350 m2/g**
- **Pore Size** : **100 Å (10 nm)**
- **Pore Volume** : **0.85mL/g**
- **Functional Group** : **Pentafluorophenyl**
- **End-capping** : **Yes**
- **Carbon Loading** : **10%**
- **USP Code** : **L43**
- **pH Range** : **2 - 7.5**



Inertsil PFP is a column with a pentafluorophenyl group that is chemically bonded to silica gel.
Since various interactions such as hydrophobic interaction, dipole interaction, and pi-interaction interaction are involved, the column exhibits a unique separation behavior that is different from ODS and phenyl columns. It also provides an excellent three-dimensional structure recognition performance.
Another feature is the extremely strong retention performance against highly polar or hydrophilic basic compounds.
In addition, the advanced end-capping treatment allows for the sharp elution of compounds that are prone to adsorption.

Figure 1 : Comparison of Selectivity Between Reversed Phase Columns



Conditions

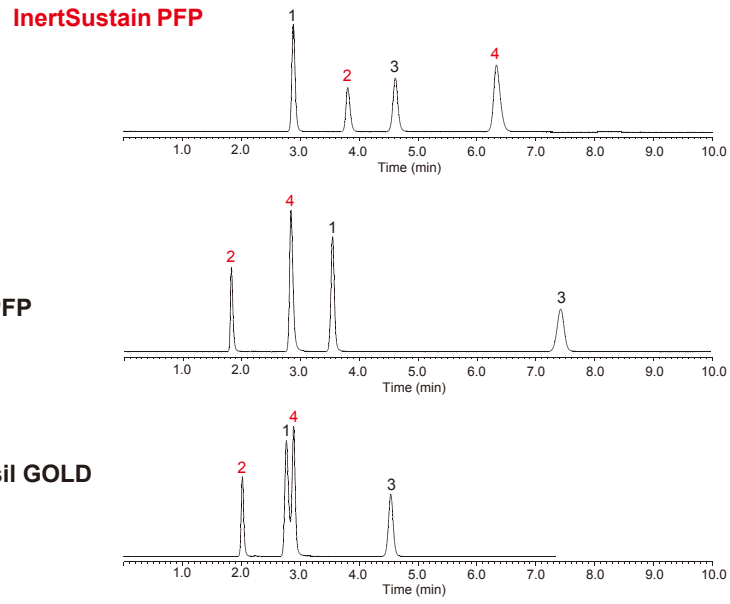
Eluent	: A) CH_3OH
	B) H_2O
	A/B = 80/20, v/v
Column Size	: 5 µm,150 × 4.6 mm I.D.
Flow Rate	: 1.0 mL/min
Col. Temp.	: 40 °C
Detection	: UV 210 nm
Sample	: 1. *cis*-Stilbene
	2. *trans*-Stilbene

*α (*trans/cis*) : The ratio of retention factor of *cis*-Stilbene and *trans*-Stilbene

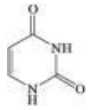
1. *cis*-Stilbene (*cis*)

2. *trans*-Stilbene (*trans*)

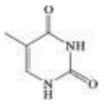
Figure 2: Comparison of High Polarity Compounds Analysis



Middle Compound Compound

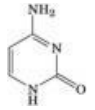


1 : Uracil

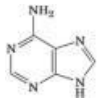


3 : Thymine

Basic Compound



2 : Cytosine



4 : Adenine

Conditions

Column	: 3 µm, 150 × 2.1 mm I.D.
Eluent	: 0.1 % HCOOH in H_2O
Flow Rate	: 0.2 mL/min
Col. Temp.	: 40 °C
Detection	: UV 254 nm

Analytical Columns

	Length \ I.D. (mm)	2.1	3.0	4.6
HP Series Particle Size: 3 µm 50 MPa (500 bar)	30	5020-87917	5020-87923	5020-87929
	50	5020-87918	5020-87924	5020-87930
	75	5020-87919	5020-87925	5020-87931
	100	5020-87920	5020-87926	5020-87932
	150	5020-87921	5020-87927	5020-87933
	250	5020-87922	5020-87928	5020-87934

	Length \ I.D. (mm)	1.0	1.5		
Particle Size: 3 µm	30	5020-87868	5020-87874		
	50	5020-87869	5020-87875		
	75	5020-87870	5020-87876		
	100	5020-87871	5020-87877		
	150	5020-87872	5020-87878		
	250	5020-87873	5020-87879		
	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-87828	5020-87836	5020-87844	5020-87852
	50	5020-87829	5020-87837	5020-87845	5020-87853
	75	5020-87830	5020-87838	5020-87846	5020-87854
	100	5020-87831	5020-87839	5020-87847	5020-87855
	125	5020-87832	5020-87840	5020-87848	5020-87856
	150	5020-87833	5020-87841	5020-87849	5020-87857
	250	5020-87834	5020-87842	5020-87850	5020-87858
Particle Size: 5 µm	Length \ I.D. (mm)	1.0	1.5		
	30	5020-87741	5020-87747		
	50	5020-87742	5020-87748		
	75	5020-87743	5020-87749		
	100	5020-87744	5020-87750		
	150	5020-87745	5020-87751		
	250	5020-87746	5020-87752		
	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-87701	5020-87709	5020-87717	5020-87725
	50	5020-87702	5020-87710	5020-87718	5020-87726
	75	5020-87703	5020-87711	5020-87719	5020-87727
	100	5020-87704	5020-87712	5020-87720	5020-87728
	125	5020-87705	5020-87713	5020-87721	5020-87729
	150	5020-87706	5020-87714	5020-87722	5020-87730
	250	5020-87707	5020-87715	5020-87723	5020-87731

Cartridge Guard Column E

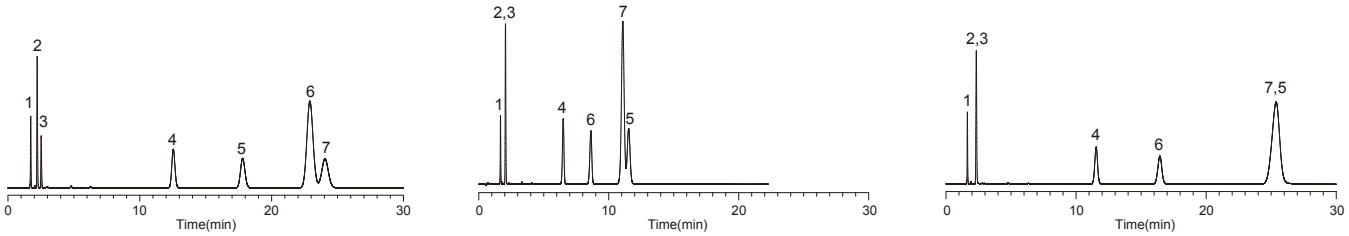
I.D. of the Analytical Column Applicable (mm)	Length (mm)	I.D. (mm)	Replacement Cartridge E Guard Column (2 pcs)		Cartridge E Holder / Cartridge Set (2 Cartridge E Guard Columns & 1 Holder)	
			Particle Size		Particle Size	
			3 µm	5 µm	3 µm	5 µm
1.0	10	1.0	5020-87907	5020-87807	5020-87908	5020-87808
1.5, 2.1		1.5	5020-87909	5020-87809	5020-87910	5020-87810
2.1, 3.0		3.0	5020-87905	5020-87805	5020-87906	5020-87806
4.0, 4.6		4.0	5020-87903	5020-87803	5020-87904	5020-87804
2.1, 3.0	20	3.0	5020-87913	5020-87813	5020-87914	5020-87814
4.0, 4.6		4.0	5020-87911	5020-87811	5020-87912	5020-87812
Holder for Cartridge Guard Column E				For 10 mm Length		5020-08500
				For 20 mm Length		5020-08550

InertSustain Phenylhexyl

- **Silica** : **High Purity ES Silica Gel**
- **Particle Size** : **3 µm, 5 µm**
- **Surface Area** : **350 m^2/g**
- **Pore Size** : **100 Å (10 nm)**
- **Pore Volume** : **0.85 mL/g**
- **Functional Group** : **Phenylhexyl**
- **End-capping** : **Yes**
- **Carbon Loading** : **9.0 %**
- **USP Code** : **L11**
- **pH Range** : **1 - 10**

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

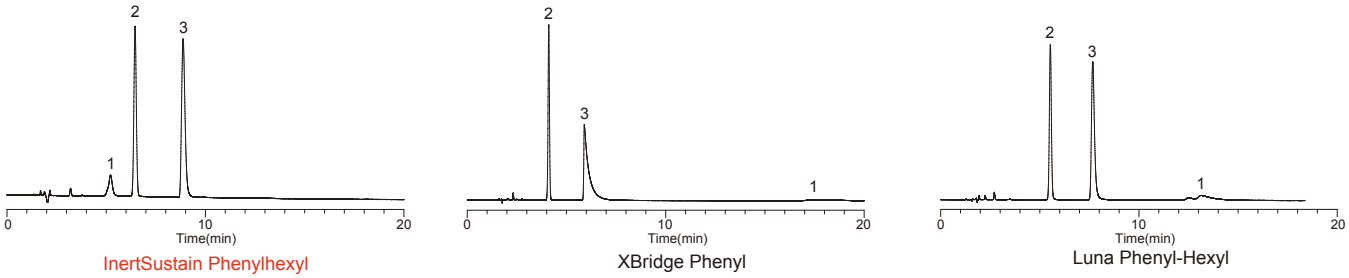
Figure 1 : Comparison of Selectivity



Conditions

Column Size	: 5 µm, 150 × 4.6 mm I.D.	Sample	: 1. Uracil
Eluent	: A) CH_3OH		2. Caffeine
	B) H_2O		3. Phenol
	A/B = 70/30, v/v		4. Butylbenzene
Flow Rate	: 1.0 mL / min		5. *o*-Terphenyl
Col. Temp.	: 40 °C		6. Amylbenzene
Detection	: UV 254 nm		7. Triphenylene

Figure 2 : Analysis of Acidic Compounds



Conditions

Column Size	: 5 µm, 150 × 4.6 mm I.D.	Sample	: 1. Brilliant Blue FCF
Eluent	: A) CH_3CN		2. Phenol
	B) 0.1% H_3PO_4		3. Salicylic acid
	A/B = 25/75, v/v		
Flow Rate	: 1.0 mL/min		
Col. Temp.	: 40 °C		
Detection	: UV 254 nm		

Analytical Columns

	Length \ I.D.(mm)	2.1	3.0	4.6
HP Series Particle Size: 3 µm 50 MPa (500 bar)	30	5020-89209	5020-89215	5020-89221
	50	5020-89210	5020-89216	5020-89222
	75	5020-89211	5020-89217	5020-89223
	100	5020-89212	5020-89218	5020-89224
	150	5020-89213	5020-89219	5020-89225
	250	5020-89214	5020-89220	5020-89226

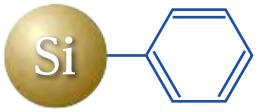
	Length \ I.D. (mm)	1.0	1.5		
Particle Size: 3 µm	30	5020-89160	5020-89166		
	50	5020-89161	5020-89167		
	75	5020-89162	5020-89168		
	100	5020-89163	5020-89169		
	150	5020-89164	5020-89170		
	250	5020-89165	5020-89171		
	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-89124	5020-89131	5020-89138	5020-89145
	50	5020-89125	5020-89132	5020-89139	5020-89146
	75	5020-89126	5020-89133	5020-89140	5020-89147
	100	5020-89127	5020-89134	5020-89141	5020-89148
	150	5020-89128	5020-89135	5020-89142	5020-89149
	250	5020-89129	5020-89136	5020-89143	5020-89150
Particle Size: 5 µm	Length \ I.D. (mm)	1.0	1.5		
	30	5020-89038	5020-89044		
	50	5020-89039	5020-89045		
	75	5020-89040	5020-89046		
	100	5020-89041	5020-89047		
	150	5020-89042	5020-89048		
	250	5020-89043	5020-89049		
	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-89001	5020-89008	5020-89015	5020-89022
	50	5020-89002	5020-89009	5020-89016	5020-89023
	75	5020-89003	5020-89010	5020-89017	5020-89024
	100	5020-89004	5020-89011	5020-89018	5020-89025
	150	5020-89005	5020-89012	5020-89019	5020-89026
	250	5020-89006	5020-89013	5020-89020	5020-89027

Cartridge Guard Column E

I.D. of the Analytical Column Applicable (mm)	Length (mm)	I.D. (mm)	Replacement Cartridge E Guard Column (2 pcs)		Cartridge E Holder / Cartridge Set (2 Cartridge E Guard Columns & 1 Holder)	
			Particle Size		Particle Size	
			3 µm	5 µm	3 µm	5 µm
1.0	10	1.0	5020-89199	5020-89105	5020-89200	5020-89106
1.5, 2.1		1.5	5020-89201	5020-89107	5020-89202	5020-89108
2.1, 3.0		3.0	5020-89197	5020-89103	5020-89198	5020-89104
4.0, 4.6		4.0	5020-89195	5020-89101	5020-89196	5020-89102
2.1, 3.0	20	3.0	5020-89205	5020-89111	5020-89206	5020-89112
4.0, 4.6		4.0	5020-89203	5020-89109	5020-89204	5020-89110
Holder for Cartridge Guard Column E				For 10 mm Length		5020-08500
				For 20 mm Length		5020-08550

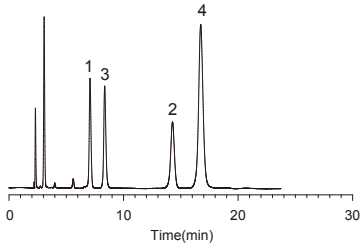
InertSustain Phenyl

- **Silica** : **High Purity ES Silica Gel**
- **Particle Size** : **2 µm, 3 µm, 5 µm**
- **Surface Area** : **350 m^2/g**
- **Pore Size** : **100 Å (10 nm)**
- **Pore Volume** : **0.85 mL/g**
- **Functional Group** : **Phenyl**
- **End-capping** : **None**
- **Carbon Loading** : **10 %**
- **USP Code** : **L11**
- **pH Range** : **2 - 7.5**

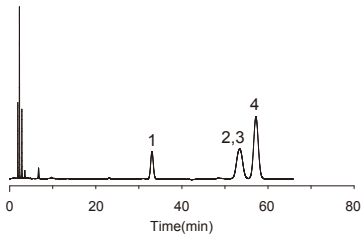


InertSustain Phenyl is a direct phenyl group bond type with a phenyl group that is bonded directly to silica gel. It provides significantly different separation compared with ODS columns and better separation performance. it recognizes the differences among the electronic states of aromatic compounds more than a general phenyl column (alkyl phenyl group bonded column).
Phenyl group is chemically modified at a high density, and it provides the best pi-pi interaction among phenyl columns and exhibits unprecedented separation performance.

Figure 1 : Comparison of Selectivity



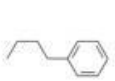
InertSustain Phenyl



InertSustain C18

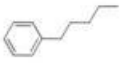
Conditions

Column Size : 5 µm, 150 × 4.6 mm I.D.
Eluent : A) CH_3OH
B) H_2O
A/B = 70/30, v/v
Flow Rate : 0.8 mL/min
Col. Temp. : 40 °C
Detection : UV 254 nm



1. Butylbenzene

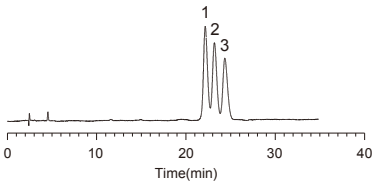
2.*o* -Terphenyl
Non - Planar Structure



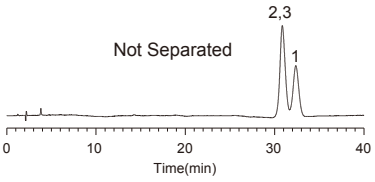
3. Amylbenzene

4. Triphenylene
Planar Structure

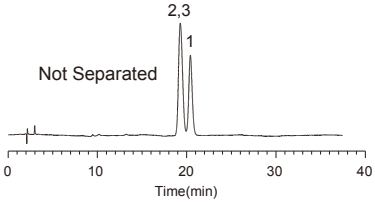
Figure 2 : Analysis of Structural Isomers (Positional Isomers of Cresol)



InertSustain Phenyl



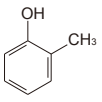
Ascentis Phenyl



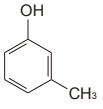
XBridge Phenyl

Conditions

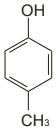
Column Size : 5 µm, 150 × 4.6 mm I.D.
Eluent : A) CH_3OH
B) H_2O
A/B = 20/80, v/v
Col. Temp. : 40 °C
Flow Rate : 0.8 mL/min
Detection : UV 254 nm



1. *o*-Cresol



2. *m*-Cresol



3. *p*-Cresol

Analytical Columns

Particle Size: 2 µm	Length \ I.D.(mm)	2.1	3.0	
	30	5020-16535	5020-16540	
	50	5020-16536	5020-16541	
	75	5020-16537	5020-16542	
	100	5020-16538	5020-16543	
	150	5020-16539	5020-16544	
HP Series Particle Size: 3 µm 50 MPa (500 bar)	Length \ I.D. (mm)	2.1	3.0	4.6
	30	5020-16517	5020-16523	5020-16529
	50	5020-16518	5020-16524	5020-16530
	75	5020-16519	5020-16525	5020-16531
	100	5020-16520	5020-16526	5020-16532
	150	5020-16521	5020-16527	5020-16533
	250	5020-16522	5020-16528	5020-16534

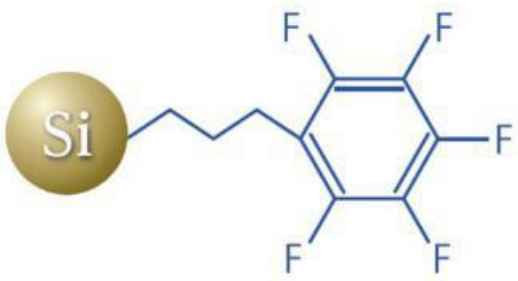
Particle Size: 3 µm	Length \ I.D. (mm)	1.0	1.5		
	30	5020-16468	5020-16474		
	50	5020-16469	5020-16475		
	75	5020-16470	5020-16476		
	100	5020-16471	5020-16477		
	150	5020-16472	5020-16478		
	250	5020-16473	5020-16479		
	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-16432	5020-16439	5020-16446	5020-16453
	50	5020-16433	5020-16440	5020-16447	5020-16454
	75	5020-16434	5020-16441	5020-16448	5020-16455
	100	5020-16435	5020-16442	5020-16449	5020-16456
	150	5020-16436	5020-16443	5020-16450	5020-16457
	250	5020-16437	5020-16444	5020-16451	5020-16458
Particle Size: 5 µm	Length \ I.D. (mm)	1.0	1.5		
	30	5020-16339	5020-16345		
	50	5020-16340	5020-16346		
	75	5020-16341	5020-16347		
	100	5020-16342	5020-16348		
	150	5020-16343	5020-16349		
	250	5020-16344	5020-16350		
	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-16302	5020-16309	5020-16316	5020-16323
	50	5020-16303	5020-16310	5020-16317	5020-16324
	75	5020-16304	5020-16311	5020-16318	5020-16325
	100	5020-16305	5020-16312	5020-16319	5020-16326
	150	5020-16306	5020-16313	5020-16320	5020-16327
	250	5020-16307	5020-16314	5020-16321	5020-16328

Cartridge Guard Column E

I.D. of the Analytical Column Applicable (mm)	Length (mm)	I.D. (mm)	Replacement Cartridge E Guard Column (2 pcs)		Cartridge E Holder / Cartridge Set (2 Cartridge E Guard Columns & 1 Holder)	
			Particle Size		Particle Size	
			3 µm	5 µm	3 µm	5 µm
1.0	10	1.0	5020-16507	5020-16406	5020-16508	5020-16407
1.5, 2.1		1.5	5020-16509	5020-16408	5020-16510	5020-16409
2.1, 3.0		3.0	5020-16505	5020-16404	5020-16506	5020-16405
4.0, 4.6		4.0	5020-16503	5020-16402	5020-16504	5020-16403
2.1, 3.0	20	3.0	5020-16513	5020-16412	5020-16514	5020-16413
4.0, 4.6		4.0	5020-16511	5020-16410	5020-16512	5020-16411
Holder for Cartridge Guard Column E				For 10 mm Length		5020-08500
				For 20 mm Length		5020-08550

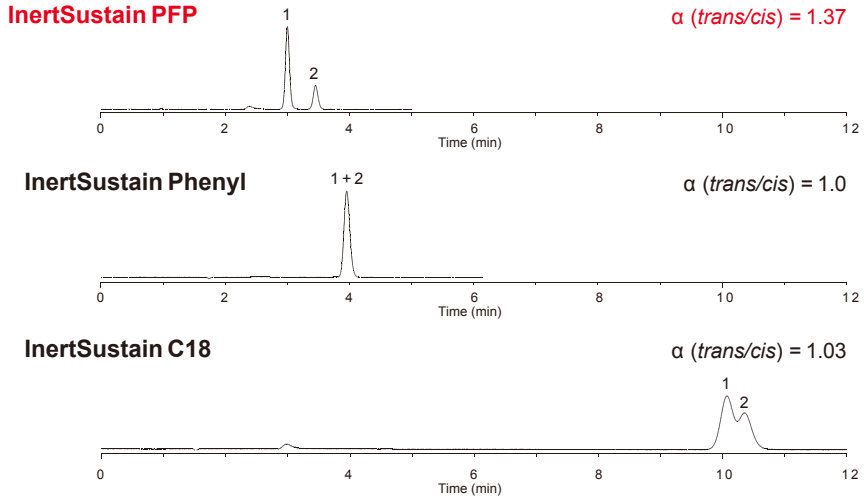
InertSustain PFP

- **Base Material** : **High Purity ES Silica Gel**
- **Particle Size** : **3 µm, 5 µm**
- **Surface Area** : **350 m2/g**
- **Pore Size** : **100 Å (10 nm)**
- **Pore Volume** : **0.85mL/g**
- **Functional Group** : **Pentafluorophenyl**
- **End-capping** : **Yes**
- **Carbon Loading** : **10%**
- **USP Code** : **L43**
- **pH Range** : **2 - 7.5**



Inertsil PFP is a column with a pentafluorophenyl group that is chemically bonded to silica gel.
Since various interactions such as hydrophobic interaction, dipole interaction, and pi-interaction interaction are involved, the column exhibits a unique separation behavior that is different from ODS and phenyl columns. It also provides an excellent three-dimensional structure recognition performance.
Another feature is the extremely strong retention performance against highly polar or hydrophilic basic compounds.
In addition, the advanced end-capping treatment allows for the sharp elution of compounds that are prone to adsorption.

Figure 1 : Comparison of Selectivity Between Reversed Phase Columns



Conditions

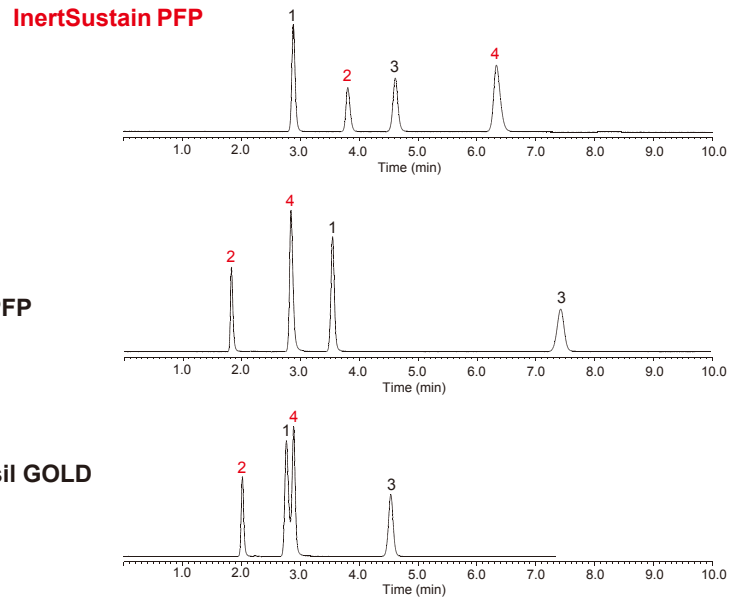
Eluent	: A) CH_3OH
	B) H_2O
	A/B = 80/20, v/v
Column Size	: 5 µm,150 × 4.6 mm I.D.
Flow Rate	: 1.0 mL/min
Col. Temp.	: 40 °C
Detection	: UV 210 nm
Sample	: 1. *cis*-Stilbene
	2. *trans*-Stilbene

*α (*trans/cis*) : The ratio of retention factor of *cis*-Stilbene and *trans*-Stilbene

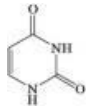
1. *cis*-Stilbene (*cis*)

2. *trans*-Stilbene (*trans*)

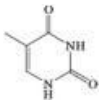
Figure 2: Comparison of High Polarity Compounds Analysis



Middle Compound Compound

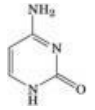


1 : Uracil

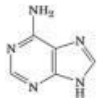


3 : Thymine

Basic Compound



2 : Cytosine



4 : Adenine

Conditions

Column	: 3 µm, 150 × 2.1 mm I.D.
Eluent	: 0.1 % HCOOH in H_2O
Flow Rate	: 0.2 mL/min
Col. Temp.	: 40 °C
Detection	: UV 254 nm

Analytical Columns

	Length \ I.D. (mm)	2.1	3.0	4.6
HP Series Particle Size: 3 µm 50 MPa (500 bar)	30	5020-87917	5020-87923	5020-87929
	50	5020-87918	5020-87924	5020-87930
	75	5020-87919	5020-87925	5020-87931
	100	5020-87920	5020-87926	5020-87932
	150	5020-87921	5020-87927	5020-87933
	250	5020-87922	5020-87928	5020-87934

	Length \ I.D. (mm)	1.0	1.5		
Particle Size: 3 µm	30	5020-87868	5020-87874		
	50	5020-87869	5020-87875		
	75	5020-87870	5020-87876		
	100	5020-87871	5020-87877		
	150	5020-87872	5020-87878		
	250	5020-87873	5020-87879		
	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-87828	5020-87836	5020-87844	5020-87852
	50	5020-87829	5020-87837	5020-87845	5020-87853
	75	5020-87830	5020-87838	5020-87846	5020-87854
	100	5020-87831	5020-87839	5020-87847	5020-87855
	125	5020-87832	5020-87840	5020-87848	5020-87856
	150	5020-87833	5020-87841	5020-87849	5020-87857
	250	5020-87834	5020-87842	5020-87850	5020-87858
Particle Size: 5 µm	Length \ I.D. (mm)	1.0	1.5		
	30	5020-87741	5020-87747		
	50	5020-87742	5020-87748		
	75	5020-87743	5020-87749		
	100	5020-87744	5020-87750		
	150	5020-87745	5020-87751		
	250	5020-87746	5020-87752		
	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-87701	5020-87709	5020-87717	5020-87725
	50	5020-87702	5020-87710	5020-87718	5020-87726
	75	5020-87703	5020-87711	5020-87719	5020-87727
	100	5020-87704	5020-87712	5020-87720	5020-87728
	125	5020-87705	5020-87713	5020-87721	5020-87729
	150	5020-87706	5020-87714	5020-87722	5020-87730
	250	5020-87707	5020-87715	5020-87723	5020-87731

Cartridge Guard Column E

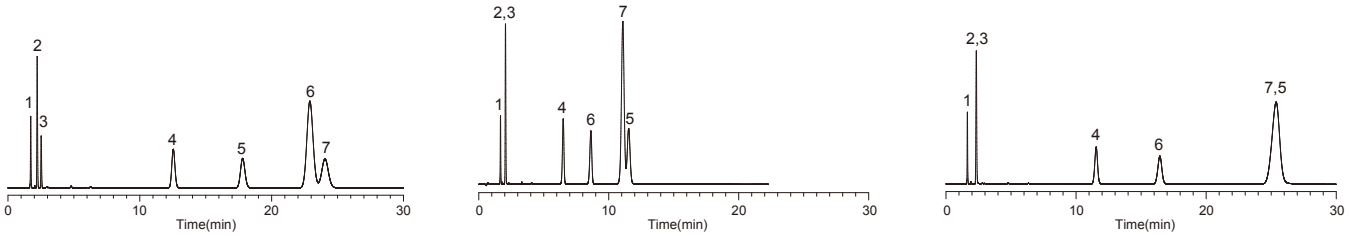
I.D. of the Analytical Column Applicable (mm)	Length (mm)	I.D. (mm)	Replacement Cartridge E Guard Column (2 pcs)		Cartridge E Holder / Cartridge Set (2 Cartridge E Guard Columns & 1 Holder)	
			Particle Size		Particle Size	
			3 µm	5 µm	3 µm	5 µm
1.0	10	1.0	5020-87907	5020-87807	5020-87908	5020-87808
1.5, 2.1		1.5	5020-87909	5020-87809	5020-87910	5020-87810
2.1, 3.0		3.0	5020-87905	5020-87805	5020-87906	5020-87806
4.0, 4.6		4.0	5020-87903	5020-87803	5020-87904	5020-87804
2.1, 3.0	20	3.0	5020-87913	5020-87813	5020-87914	5020-87814
4.0, 4.6		4.0	5020-87911	5020-87811	5020-87912	5020-87812
Holder for Cartridge Guard Column E				For 10 mm Length		5020-08500
				For 20 mm Length		5020-08550

InertSustain Phenylhexyl

- **Silica** : **High Purity ES Silica Gel**
- **Particle Size** : **3 µm, 5 µm**
- **Surface Area** : **350 m^2/g**
- **Pore Size** : **100 Å (10 nm)**
- **Pore Volume** : **0.85 mL/g**
- **Functional Group** : **Phenylhexyl**
- **End-capping** : **Yes**
- **Carbon Loading** : **9.0 %**
- **USP Code** : **L11**
- **pH Range** : **1 - 10**

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

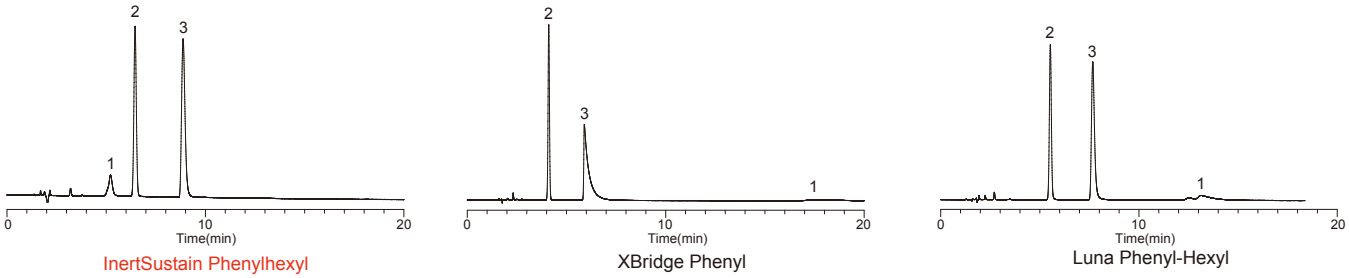
Figure 1 : Comparison of Selectivity



Conditions

Column Size	: 5 µm, 150 × 4.6 mm I.D.	Sample	: 1. Uracil
Eluent	: A) CH_3OH		2. Caffeine
	B) H_2O		3. Phenol
	A/B = 70/30, v/v		4. Butylbenzene
Flow Rate	: 1.0 mL / min		5. *o*-Terphenyl
Col. Temp.	: 40 °C		6. Amylbenzene
Detection	: UV 254 nm		7. Triphenylene

Figure 2 : Analysis of Acidic Compounds



Conditions

Column Size	: 5 µm, 150 × 4.6 mm I.D.	Sample	: 1. Brilliant Blue FCF
Eluent	: A) CH_3CN		2. Phenol
	B) 0.1% H_3PO_4		3. Salicylic acid
	A/B = 25/75, v/v		
Flow Rate	: 1.0 mL/min		
Col. Temp.	: 40 °C		
Detection	: UV 254 nm		

Analytical Columns

	Length \ I.D.(mm)	2.1	3.0	4.6
HP Series Particle Size: 3 µm 50 MPa (500 bar)	30	5020-89209	5020-89215	5020-89221
	50	5020-89210	5020-89216	5020-89222
	75	5020-89211	5020-89217	5020-89223
	100	5020-89212	5020-89218	5020-89224
	150	5020-89213	5020-89219	5020-89225
	250	5020-89214	5020-89220	5020-89226

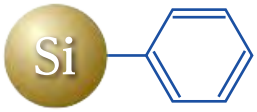
	Length \ I.D. (mm)	1.0	1.5		
Particle Size: 3 µm	30	5020-89160	5020-89166		
	50	5020-89161	5020-89167		
	75	5020-89162	5020-89168		
	100	5020-89163	5020-89169		
	150	5020-89164	5020-89170		
	250	5020-89165	5020-89171		
	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-89124	5020-89131	5020-89138	5020-89145
	50	5020-89125	5020-89132	5020-89139	5020-89146
	75	5020-89126	5020-89133	5020-89140	5020-89147
	100	5020-89127	5020-89134	5020-89141	5020-89148
	150	5020-89128	5020-89135	5020-89142	5020-89149
	250	5020-89129	5020-89136	5020-89143	5020-89150
Particle Size: 5 µm	Length \ I.D. (mm)	1.0	1.5		
	30	5020-89038	5020-89044		
	50	5020-89039	5020-89045		
	75	5020-89040	5020-89046		
	100	5020-89041	5020-89047		
	150	5020-89042	5020-89048		
	250	5020-89043	5020-89049		
	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-89001	5020-89008	5020-89015	5020-89022
	50	5020-89002	5020-89009	5020-89016	5020-89023
	75	5020-89003	5020-89010	5020-89017	5020-89024
	100	5020-89004	5020-89011	5020-89018	5020-89025
	150	5020-89005	5020-89012	5020-89019	5020-89026
	250	5020-89006	5020-89013	5020-89020	5020-89027

Cartridge Guard Column E

I.D. of the Analytical Column Applicable (mm)	Length (mm)	I.D. (mm)	Replacement Cartridge E Guard Column (2 pcs)		Cartridge E Holder / Cartridge Set (2 Cartridge E Guard Columns & 1 Holder)	
			Particle Size		Particle Size	
			3 µm	5 µm	3 µm	5 µm
1.0	10	1.0	5020-89199	5020-89105	5020-89200	5020-89106
1.5, 2.1		1.5	5020-89201	5020-89107	5020-89202	5020-89108
2.1, 3.0		3.0	5020-89197	5020-89103	5020-89198	5020-89104
4.0, 4.6		4.0	5020-89195	5020-89101	5020-89196	5020-89102
2.1, 3.0	20	3.0	5020-89205	5020-89111	5020-89206	5020-89112
4.0, 4.6		4.0	5020-89203	5020-89109	5020-89204	5020-89110
Holder for Cartridge Guard Column E				For 10 mm Length		5020-08500
				For 20 mm Length		5020-08550

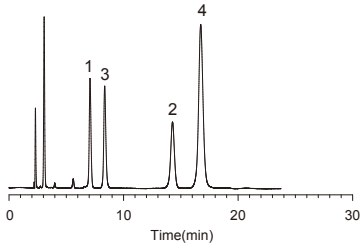
InertSustain Phenyl

- **Silica** : **High Purity ES Silica Gel**
- **Particle Size** : **2 µm, 3 µm, 5 µm**
- **Surface Area** : **350 m^2/g**
- **Pore Size** : **100 Å (10 nm)**
- **Pore Volume** : **0.85 mL/g**
- **Functional Group** : **Phenyl**
- **End-capping** : **None**
- **Carbon Loading** : **10 %**
- **USP Code** : **L11**
- **pH Range** : **2 - 7.5**

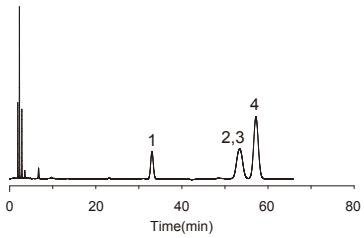


InertSustain Phenyl is a direct phenyl group bond type with a phenyl group that is bonded directly to silica gel. It provides significantly different separation compared with ODS columns and better separation performance. it recognizes the differences among the electronic states of aromatic compounds more than a general phenyl column (alkyl phenyl group bonded column).
Phenyl group is chemically modified at a high density, and it provides the best pi-pi interaction among phenyl columns and exhibits unprecedented separation performance.

Figure 1 : Comparison of Selectivity



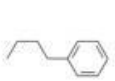
InertSustain Phenyl



InertSustain C18

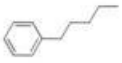
Conditions

Column Size : 5 µm, 150 × 4.6 mm I.D.
Eluent : A) CH_3OH
B) H_2O
A/B = 70/30, v/v
Flow Rate : 0.8 mL/min
Col. Temp. : 40 °C
Detection : UV 254 nm



1. Butylbenzene

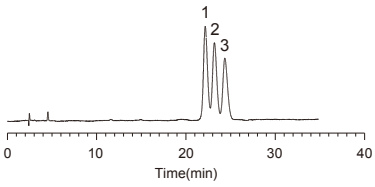
2.*o* -Terphenyl
Non - Planar Structure



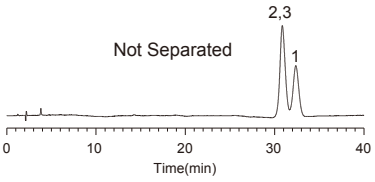
3. Amylbenzene

4. Triphenylene
Planar Structure

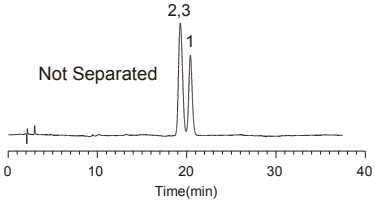
Figure 2 : Analysis of Structural Isomers (Positional Isomers of Cresol)



InertSustain Phenyl



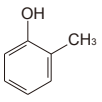
Ascentis Phenyl



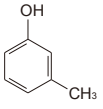
XBridge Phenyl

Conditions

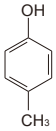
Column Size : 5 µm, 150 × 4.6 mm I.D.
Eluent : A) CH_3OH
B) H_2O
A/B = 20/80, v/v
Col. Temp. : 40 °C
Flow Rate : 0.8 mL/min
Detection : UV 254 nm



1. *o*-Cresol



2. *m*-Cresol



3. *p*-Cresol

Analytical Columns

Particle Size: 2 µm	Length \ I.D.(mm)	2.1	3.0	
	30	5020-16535	5020-16540	
	50	5020-16536	5020-16541	
	75	5020-16537	5020-16542	
	100	5020-16538	5020-16543	
	150	5020-16539	5020-16544	
HP Series Particle Size: 3 µm 50 MPa (500 bar)	Length \ I.D. (mm)	2.1	3.0	4.6
	30	5020-16517	5020-16523	5020-16529
	50	5020-16518	5020-16524	5020-16530
	75	5020-16519	5020-16525	5020-16531
	100	5020-16520	5020-16526	5020-16532
	150	5020-16521	5020-16527	5020-16533
	250	5020-16522	5020-16528	5020-16534

Particle Size: 3 µm	Length \ I.D. (mm)	1.0	1.5		
	30	5020-16468	5020-16474		
	50	5020-16469	5020-16475		
	75	5020-16470	5020-16476		
	100	5020-16471	5020-16477		
	150	5020-16472	5020-16478		
	250	5020-16473	5020-16479		
	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-16432	5020-16439	5020-16446	5020-16453
	50	5020-16433	5020-16440	5020-16447	5020-16454
	75	5020-16434	5020-16441	5020-16448	5020-16455
	100	5020-16435	5020-16442	5020-16449	5020-16456
	150	5020-16436	5020-16443	5020-16450	5020-16457
	250	5020-16437	5020-16444	5020-16451	5020-16458
Particle Size: 5 µm	Length \ I.D. (mm)	1.0	1.5		
	30	5020-16339	5020-16345		
	50	5020-16340	5020-16346		
	75	5020-16341	5020-16347		
	100	5020-16342	5020-16348		
	150	5020-16343	5020-16349		
	250	5020-16344	5020-16350		
	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-16302	5020-16309	5020-16316	5020-16323
	50	5020-16303	5020-16310	5020-16317	5020-16324
	75	5020-16304	5020-16311	5020-16318	5020-16325
	100	5020-16305	5020-16312	5020-16319	5020-16326
	150	5020-16306	5020-16313	5020-16320	5020-16327
	250	5020-16307	5020-16314	5020-16321	5020-16328

Cartridge Guard Column E

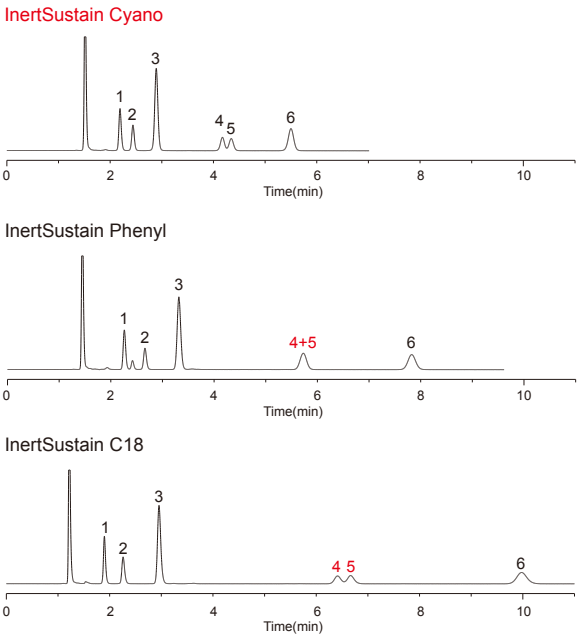
I.D. of the Analytical Column Applicable (mm)	Length (mm)	I.D. (mm)	Replacement Cartridge E Guard Column (2 pcs)		Cartridge E Holder / Cartridge Set (2 Cartridge E Guard Columns & 1 Holder)	
			Particle Size		Particle Size	
			3 µm	5 µm	3 µm	5 µm
1.0	10	1.0	5020-16507	5020-16406	5020-16508	5020-16407
1.5, 2.1		1.5	5020-16509	5020-16408	5020-16510	5020-16409
2.1, 3.0		3.0	5020-16505	5020-16404	5020-16506	5020-16405
4.0, 4.6		4.0	5020-16503	5020-16402	5020-16504	5020-16403
2.1, 3.0	20	3.0	5020-16513	5020-16412	5020-16514	5020-16413
4.0, 4.6		4.0	5020-16511	5020-16410	5020-16512	5020-16411
Holder for Cartridge Guard Column E				For 10 mm Length		5020-08500
				For 20 mm Length		5020-08550

InertSustain Cyano

- **Base Material** : **High Purity ES Silica Gel**
- **Particle Size** : **3 µm, 5 µm**
- **Surface Area** : **350 m^2/g**
- **Pore Size** : **100 Å (10 nm)**
- **Pore Volume** : **0.85mL/g**
- **Functional Group** : **Cyanopropyl**
- **End-capping** : **Yes**
- **Carbon Loading** : **8%**
- **USP Code** : **L10**
- **pH Range** : **2 - 7.5**

The stability and reproducibility of the marketed Cyano phase is generally poor. Low batch-to-batch or lot-to-lot reproducibility are common problems in laboratories.The InertSustain Cyano columns were developed to resolve these problems. Fabricated using the latest available LC column technology, they are extremely inert, stable, and reproducible.
The InertSustain Cyano columns are highly recommended for all pharmacopeia methods requiring a Cyano phase (Ex: USP L10)

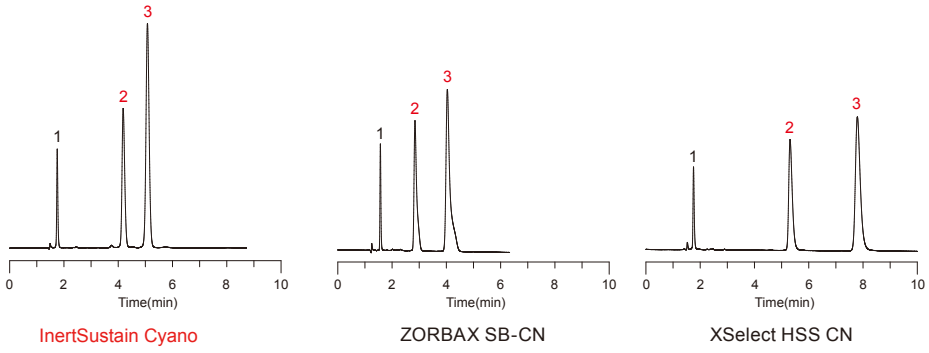
Figure 1 : Comparison of Selectivity



Conditions

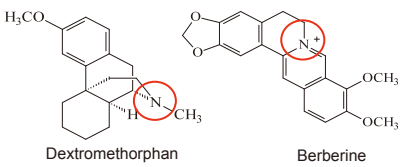
Column Size	:	5 µm,150 × 4.6 mm I.D.
Eluent	:	A) CH_3CN
		B) 0.1 % H_3PO_4
		A/B = 25/75, v/v
Flow Rate	:	1.0 mL/min
Col. Temp.	:	40 °C
Detection	:	UV 280 nm
Sample	:	1. 4-Hydroxybenzamide
		2. Hydroquinone
		3. 4-Hydoroxybenzoic acid
		4. Phenol
		5. 4-Hydoroxybenzonitoril
		6. *p*-Nitrophenol

Figure 2 : Comparison of Basic Compounds Analysis



Conditions

Column Size	:	5 µm,150 × 4.6 mm I.D.
Eluent	:	A) CH_3CN
		B) 0.1% H_3PO_4
		A/B = 25/75, v/v
Flow Rate	:	1.0 mL/min
Col. Temp.	:	40 °C
Detection	:	UV 230 nm
Sample	:	1. Uracil
		2. Dextromethorphan
		3. Berberine



Analytical Columns

	Length \ I.D. (mm)	2.1	3.0	4.6
HP Series Particle Size: 3 µm 50 MPa (500 bar)	30	5020-89459	5020-89465	5020-89471
	50	5020-89460	5020-89466	5020-89472
	75	5020-89461	5020-89467	5020-89473
	100	5020-89462	5020-89468	5020-89474
	150	5020-89463	5020-89469	5020-89475
	250	5020-89464	5020-89470	5020-89476

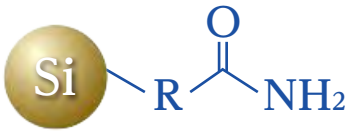
	Length \ I.D. (mm)	1.0	1.5		
Particle Size: 3 µm	30	5020-89410	5020-89416		
	50	5020-89411	5020-89417		
	75	5020-89412	5020-89418		
	100	5020-89413	5020-89419		
	150	5020-89414	5020-89420		
	250	5020-89415	5020-89421		
	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-89374	5020-89381	5020-89388	5020-89395
	50	5020-89375	5020-89382	5020-89389	5020-89396
	75	5020-89376	5020-89383	5020-89390	5020-89397
	100	5020-89377	5020-89384	5020-89391	5020-89398
	150	5020-89378	5020-89385	5020-89392	5020-89399
	250	5020-89379	5020-89386	5020-89393	5020-89400
Particle Size: 5 µm	Length \ I.D. (mm)	1.0	1.5		
	30	5020-89288	5020-89294		
	50	5020-89289	5020-89295		
	75	5020-89290	5020-89296		
	100	5020-89291	5020-89297		
	150	5020-89292	5020-89298		
	250	5020-89293	5020-89299		
	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-89251	5020-89258	5020-89265	5020-89272
	50	5020-89252	5020-89259	5020-89266	5020-89273
	75	5020-89253	5020-89260	5020-89267	5020-89274
	100	5020-89254	5020-89261	5020-89268	5020-89275
	150	5020-89255	5020-89262	5020-89269	5020-89276
	250	5020-89256	5020-89263	5020-89270	5020-89277

Cartridge Guard Column E

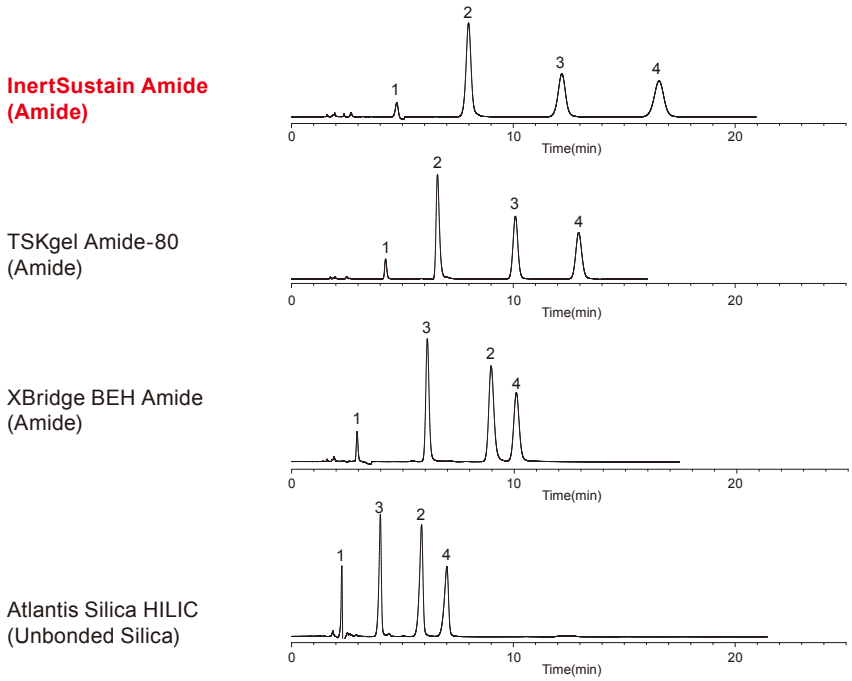
I.D. of the Analytical Column Applicable (mm)	Length (mm)	I.D. (mm)	Replacement Cartridge E Guard Column (2 pcs)		Cartridge E Holder / Cartridge Set (2 Cartridge E Guard Columns & 1 Holder)	
			Particle Size		Particle Size	
			3 µm	5 µm	3 µm	5 µm
1.0	10	1.0	5020-89449	5020-89355	5020-89450	5020-89356
1.5, 2.1		1.5	5020-89451	5020-89357	5020-89452	5020-89358
2.1, 3.0		3.0	5020-89447	5020-89353	5020-89448	5020-89354
4.0, 4.6		4.0	5020-89445	5020-89351	5020-89446	5020-89352
2.1, 3.0	20	3.0	5020-89455	5020-89361	5020-89456	5020-89362
4.0, 4.6		4.0	5020-89453	5020-89359	5020-89454	5020-89360
Holder for Cartridge Guard Column E				For 10 mm Length		5020-08500
				For 20 mm Length		5020-08550

InertSustain Amide

- **Base Material** : **High Purity ES Silica Gel**
- **Particle Size** : **1.9 µm, 3 µm, 5 µm**
- **Surface Area** : **350 m^2/g**
- **Pore Size** : **100 Å (10 nm)**
- **Pore Volume** : **0.85 mL/g**
- **Functional Group** : **Carbamoyl**
- **End-capping** : **None**
- **Carbon Loading** : **15 %**
- **USP Code** : **L68**
- **pH Range** : **2 - 8.5**



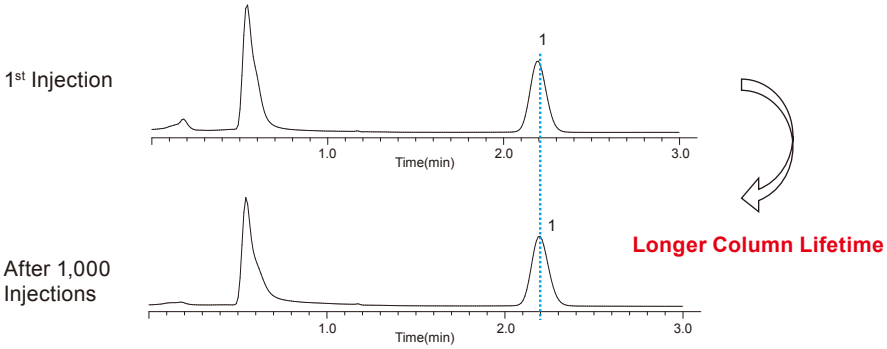
InertSustain Amide is a HILIC column that enhances the retention of extremely polar compounds.
This column offers the strongest retentivity among the marketed amide columns through bonding of carbamoyl groups. It achieves superior stability and durability even for water-rich mobile phases.
HILIC phases are particularly useful for compounds that are weakly retained by reversed phase columns such as Melamine and Cyanuric Acid.
As shown below, InertSustain Amide provides stronger retention for such analytes compared to other HILIC brand columns.



Conditions

Column	: 5 µm, 150 × 2.1 mm I.D
Eluent	: A) CH_3CN
	B) 10 mM $HCOONH_4$ in H_2O
	A/B = 90/10, v/v
Flow Rate	: 0.2 mL/min
Col. Temp.	: 40 °C
Detection	: UV 215 nm
Sample	: 1. Cyanuric Acid
	2. Melamine
	3. Ammelide
	4. Ammeline

The use of metaphosphoric acid aqueous solution as a diluent solvent is a common technique to prevent the decomposition of sample in Vitamin C (ascorbic acid) analysis. A silica-base amide type columns often show short column lifetime due to the usage of strongly acidic diluent solvent in the analysis. As proven below, InertSustain Amide offer longer column lifetime even under such harsh analytical condition.



Conditions

Column	: InertSustain Amide
	(5 µm, 150 × 3.0 mm I.D)
Eluent	: A) CH_3CN
	B) 0.1% H_3PO_4 in H_2O
	A/B = 87/13, v/v
Flow Rate	: 0.8 mL / min
Col. Temp.	: 40 °C
Detection	: UV 243 nm
Injection Vol.	: 2 µL
Sample	: 1. Ascorbic aciid
Diluent	: 2 % metaphosphoric acid aqueous solution

Analytical Columns

Particle Size: 1.9 µm	Length \ I.D. (mm)	2.1	3.0		
	30	5020-88815	5020-88820		
	50	5020-88816	5020-88821		
	75	5020-88817	5020-88822		
	100	5020-88818	5020-88823		
	150	5020-88819	5020-88824		
Particle Size: 3 µm	Length \ I.D. (mm)	1.0	1.5		
	30	5020-88766	5020-88772		
	50	5020-88767	5020-88773		
	75	5020-88768	5020-88774		
	100	5020-88769	5020-88775		
	150	5020-88770	5020-88776		
	250	5020-88771	5020-88777		
	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-88726	5020-88734	5020-88742	5020-88750
	50	5020-88727	5020-88735	5020-88743	5020-88751
	75	5020-88728	5020-88736	5020-88744	5020-88752
	100	5020-88729	5020-88737	5020-88745	5020-88753
	125	5020-88730	5020-88738	5020-88746	5020-88754
	150	5020-88731	5020-88739	5020-88747	5020-88755
	250	5020-88732	5020-88740	5020-88748	5020-88756
Particle Size: 5 µm	Length \ I.D. (mm)	1.0	1.5		
	30	5020-88642	5020-88648		
	50	5020-88643	5020-88649		
	75	5020-88644	5020-88650		
	100	5020-88645	5020-88651		
	150	5020-88646	5020-88652		
	250	5020-88647	5020-88653		
	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-88602	5020-88610	5020-88618	5020-88626
	50	5020-88603	5020-88611	5020-88619	5020-88627
	75	5020-88604	5020-88612	5020-88620	5020-88628
	100	5020-88605	5020-88613	5020-88621	5020-88629
	125	5020-88606	5020-88614	5020-88622	5020-88630
	150	5020-88607	5020-88615	5020-88623	5020-88631
	250	5020-88608	5020-88616	5020-88624	5020-88632

Cartridge Guard Column E

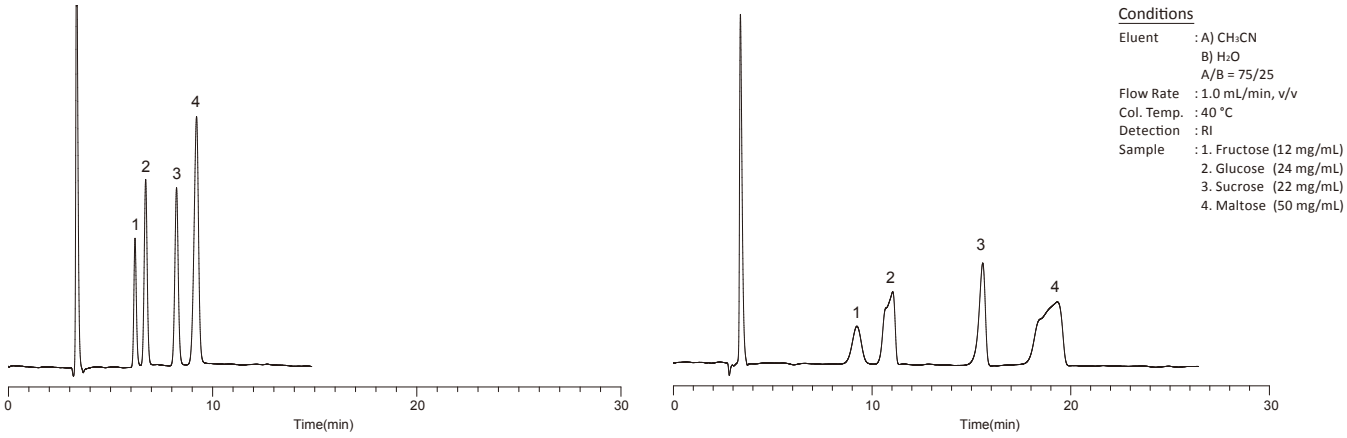
I.D. of the Analytical Column Applicable (mm)	Length (mm)	I.D. (mm)	Replacement Cartridge E Guard Column (2 pcs)		Cartridge E Holder / Cartridge Set (2 Cartridge E Guard Columns & 1 Holder)	
			Particle Size		Particle Size	
			3 µm	5 µm	3 µm	5 µm
1.0	10	1.0	5020-88805	5020-88709	5020-88806	5020-88710
1.5, 2.1		1.5	5020-88807	5020-88711	5020-88808	5020-88712
2.1, 3.0		3.0	5020-88803	5020-88707	5020-88804	5020-88708
4.0, 4.6		4.0	5020-88801	5020-88705	5020-88802	5020-88706
2.1, 3.0	20	3.0	5020-88811	5020-88715	5020-88812	5020-88716
4.0, 4.6		4.0	5020-88809	5020-88713	5020-88810	5020-88714
Holder for Cartridge Guard Column E				For 10 mm Length		5020-08500
				For 20 mm Length		5020-08550

InertSustain NH2

- **Base Material** : **High Purity ES Silica Gel**
- **Particle Size** : **3 µm, 5 µm**
- **Surface Area** : **350 m^2/g**
- **Pore Size** : **100 Å (10 nm)**
- **Pore Volume** : **0.85 mL/g**
- **Functional Group** : **Aminopropyl**
- **End-capping** : **None**
- **Carbon Loading** : **7 %**
- **USP Code** : **L8**
- **pH Range** : **2 - 7.5**

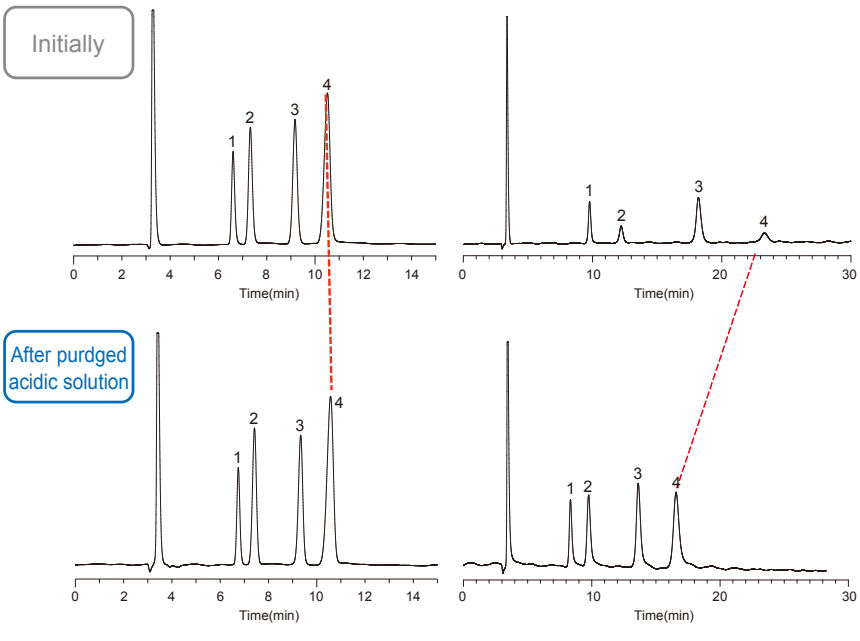
InertSustain NH2 shows far superior stability compared to other brand available aminopropyl columns, as our newly developed “Evolved Surface Silica” is chemically bonded with aminopropyl group. Generally, aminopropyl columns are used for applications that are hard to be separated in a reversed phase mode, such as simultaneous analysis of sugars or vitamin E. However, the shift in retention time has been an issue for a long time. InertSustain NH2 delivers highly reliable reproducibility and stability with accurate qualitative and quantitative results. Further more, aminopropyl columns generally can not be washed by weakly acidic eluent, however InertSustain NH2 was improved and it can be washed by weakly acidic eluent.

Figure 1 : Comparison of Preventing Anomer Resolution of Sugar Analysis



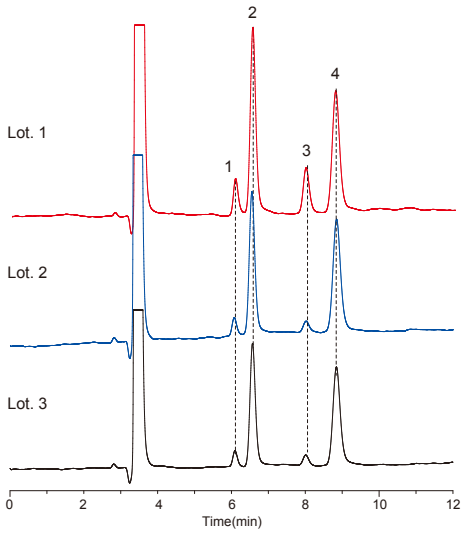
InertSustain NH2 | other brand Amide Column

Figure 2 : Retention Change after Purdged Acidic Solution



InertSustain NH2 | Other brand NH_2 columns

Figure 3 : Reliable Reproducibility



Conditions

Column	: InertSustain NH2 (5 µm, 250 × 4.6 mm I.D.)	Sample : 1. Fructose
Eluent	: A) CH_3CN	2. Glucose
	B) H_2O	3. Sucrose
	A/B = 75/25, v/v	4. Maltose
Flow Rate	: 1.0 mL/min	
Col. Temp.	: 40 °C	
Detection	: RI	

Analytical Columns

Particle Size: 3 µm	Length \ I.D. (mm)	1.0	1.5		
	30	5020-16768	5020-16774		
	50	5020-16769	5020-16775		
	75	5020-16770	5020-16776		
	100	5020-16771	5020-16777		
	150	5020-16772	5020-16778		
	250	5020-16773	5020-16779		
	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-16732	5020-16739	5020-16746	5020-16753
	50	5020-16733	5020-16740	5020-16747	5020-16754
	75	5020-16734	5020-16741	5020-16748	5020-16755
	100	5020-16735	5020-16742	5020-16749	5020-16756
	150	5020-16736	5020-16743	5020-16750	5020-16757
	250	5020-16737	5020-16744	5020-16751	5020-16758
Particle Size: 5 µm	Length \ I.D. (mm)	1.0	1.5		
	30	5020-16639	5020-16645		
	50	5020-16640	5020-16646		
	75	5020-16641	5020-16647		
	100	5020-16642	5020-16648		
	150	5020-16643	5020-16649		
	250	5020-16644	5020-16650		
	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-16602	5020-16609	5020-16616	5020-16623
	50	5020-16603	5020-16610	5020-16617	5020-16624
	75	5020-16604	5020-16611	5020-16618	5020-16625
	100	5020-16605	5020-16612	5020-16619	5020-16626
	150	5020-16606	5020-16613	5020-16620	5020-16627
	250	5020-16607	5020-16614	5020-16621	5020-16628

Cartridge Guard Column E

I.D. of the Analytical Column Applicable (mm)	Length (mm)	I.D. (mm)	Replacement Cartridge E Guard Column (2 pcs)		Cartridge E Holder / Cartridge Set (2 Cartridge E Guard Columns & 1 Holder)	
			Particle Size		Particle Size	
			3 µm	5 µm	3 µm	5 µm
1.0	10	1.0	5020-16807	5020-16706	5020-16808	5020-16707
1.5, 2.1		1.5	5020-16809	5020-16708	5020-16810	5020-16709
2.1, 3.0		3.0	5020-16805	5020-16704	5020-16806	5020-16705
4.0, 4.6		4.0	5020-16803	5020-16702	5020-16804	5020-16703
2.1, 3.0	20	3.0	5020-16813	5020-16712	5020-16814	5020-16713
4.0, 4.6		4.0	5020-16811	5020-16710	5020-16812	5020-16711
Holder for Cartridge Guard Column E				For 10 mm Length		5020-08500
				For 20 mm Length		5020-08550

InertSustain NH2 with 100% CH_3CN

Recommended using in HILIC mode. (Normal shipping containment solvents are hexane/ethanol based.)

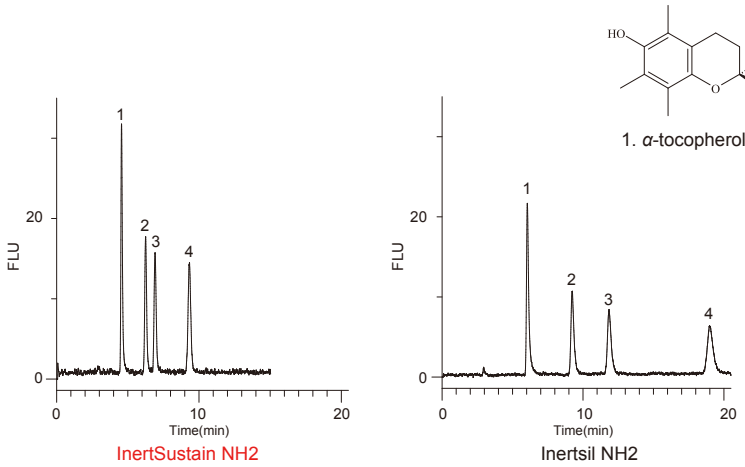
Particle Size	Length \ I.D. (mm)	4.0	4.6
5 µm	150	5020-89954	5020-89950
	250	5020-89955	5020-89951
3 µm	150	–	5020-89956
	250	–	5020-89957

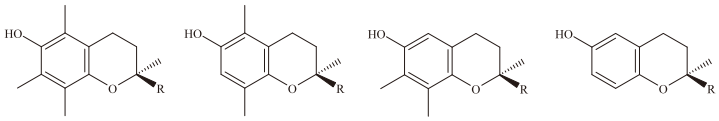
InertSustain NH2

- **Base Material** : **High Purity ES Silica Gel**
- **Particle Size** : **3 µm, 5 µm**
- **Surface Area** : **350 m^2/g**
- **Pore Size** : **100 Å (10 nm)**
- **Pore Volume** : **0.85 mL/g**
- **Functional Group** : **Aminopropyl**
- **End-capping** : **None**
- **Carbon Loading** : **7 %**
- **USP Code** : **L8**
- **pH Range** : **2 - 7.5**

InertSustain NH2 is a normal-phase column that is expected to change separation patterns due to a difference in selectivity compared with silica gel columns.
Compared with Inertsil NH2 (described below), it has a smaller surface area and elutes analytes faster to produce sharper peaks.
An InertSustain NH2 column uses n-hexane and ethyl acetate as eluents for fast elution while maintaining the separation of the tested components.
Using a column washed with isopropanol, a sample of phthalate diester was used and the time to stabilize to the analytical conditions was measured.
It is a normal-phase column that stabilized after 21 minutes during the fourth injection. It equilibrated quickly after column washing.

Figure 1 : Analysis of Vitamin E with InertSustain NH2 & Inertsil NH2 Column



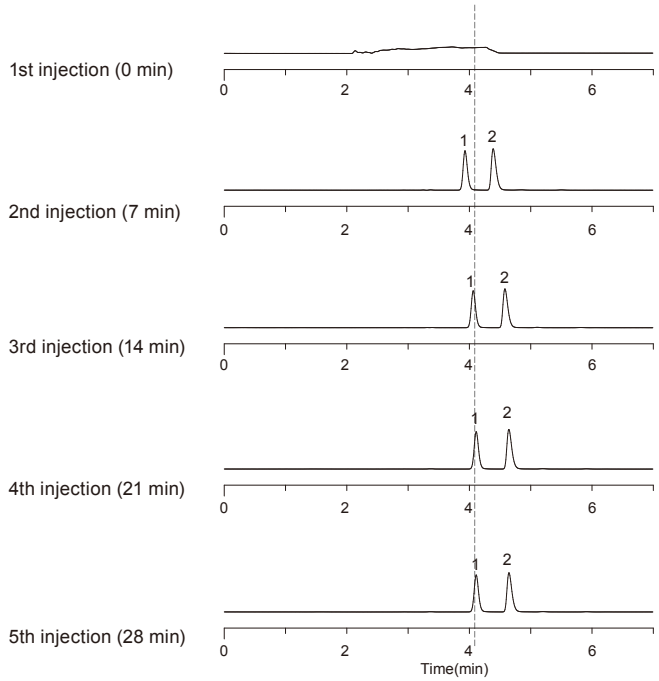


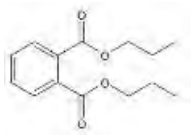
R= $(C_{16}H_{33})$

Conditions

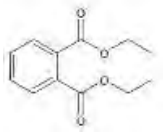
Column	:	5 µm, 250 × 4.6 mm I.D.
Eluent	:	A) *n*-Hexane B) Ethyl acetate A/B = 85/15, v/v
Flow Rate	:	1.2 mL/min
Col. Temp.	:	40 °C
Detection	:	FL Ex. 298 nm Em. 325 nm
Injection Vol.	:	20 µL
Sample	:	α-tocopherol (1 µg/mL in Hexane) β-tocopherol (1 µg/mL in Hexane) γ-tocopherol (1 µg/mL in Hexane) δ-tocopherol (1 µg/mL in Hexane)

Figure 2 : Evaluation of Equilibration Time





Di-*n*-propylphthlate



Diethy phthalate

Conditions

Column	:	InertSustain NH2 (5 µm, 250 × 4.6 mm I.D.)
Eluent	:	A) *n*-Hexane/Isopropanol = 100/1, v/v B) Isopropanol A/B = 95/5, v/v (gradient mixer)
Flow Rate	:	1.0 mL/min
Col. Temp.	:	40 °C
Detection	:	UV 300 nm

Analytical Columns

Particle Size: 3 µm	Length \ I.D. (mm)	1.0	1.5		
	30	5020-16768	5020-16774		
	50	5020-16769	5020-16775		
	75	5020-16770	5020-16776		
	100	5020-16771	5020-16777		
	150	5020-16772	5020-16778		
	250	5020-16773	5020-16779		
	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-16732	5020-16739	5020-16746	5020-16753
	50	5020-16733	5020-16740	5020-16747	5020-16754
	75	5020-16734	5020-16741	5020-16748	5020-16755
	100	5020-16735	5020-16742	5020-16749	5020-16756
	150	5020-16736	5020-16743	5020-16750	5020-16757
	250	5020-16737	5020-16744	5020-16751	5020-16758
Particle Size: 5 µm	Length \ I.D. (mm)	1.0	1.5		
	30	5020-16639	5020-16645		
	50	5020-16640	5020-16646		
	75	5020-16641	5020-16647		
	100	5020-16642	5020-16648		
	150	5020-16643	5020-16649		
	250	5020-16644	5020-16650		
	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-16602	5020-16609	5020-16616	5020-16623
	50	5020-16603	5020-16610	5020-16617	5020-16624
	75	5020-16604	5020-16611	5020-16618	5020-16625
	100	5020-16605	5020-16612	5020-16619	5020-16626
	150	5020-16606	5020-16613	5020-16620	5020-16627
	250	5020-16607	5020-16614	5020-16621	5020-16628

Cartridge Guard Column E

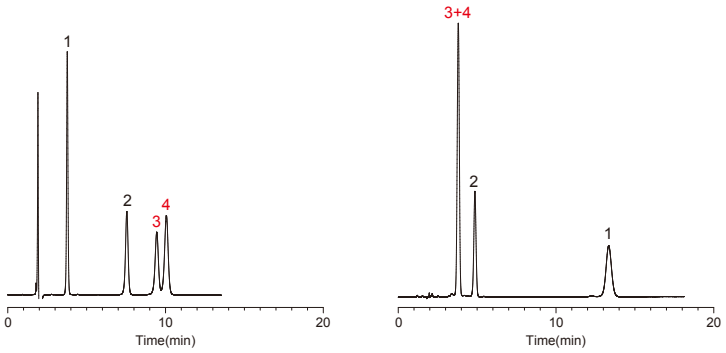
I.D. of the Analytical Column Applicable (mm)	Length (mm)	I.D. (mm)	Replacement Cartridge E Guard Column (2 pcs)		Cartridge E Holder / Cartridge Set (2 Cartridge E Guard Columns & 1 Holder)	
			Particle Size		Particle Size	
			3 µm	5 µm	3 µm	5 µm
1.0	10	1.0	5020-16807	5020-16706	5020-16808	5020-16707
1.5, 2.1		1.5	5020-16809	5020-16708	5020-16810	5020-16709
2.1, 3.0		3.0	5020-16805	5020-16704	5020-16806	5020-16705
4.0, 4.6		4.0	5020-16803	5020-16702	5020-16804	5020-16703
2.1, 3.0	20	3.0	5020-16813	5020-16712	5020-16814	5020-16713
4.0, 4.6		4.0	5020-16811	5020-16710	5020-16812	5020-16711
Holder for Cartridge Guard Column E				For 10 mm Length		5020-08500
				For 20 mm Length		5020-08550

InertSustain Cyano

- **Base Material : High Purity ES Silica Gel**
- **Particle Size : 3 µm, 5 µm**
- **Surface Area : 350 m^2/g**
- **Pore Size : 100 Å (10 nm)**
- **Pore Volume : 0.85mL/g**
- **Functional Group : Cyanopropyl**
- **End-capping : Yes**
- **Carbon Loading : 8 %**
- **USP Code : L10**
- **pH Range : 2 - 7.5**

InertSustain Cyano has chemically bonded cyanopropyl groups to silica gel, which are end-capped for use in both normal- and reversed-phase modes. Components that were difficult to separate in reversed-phase mode may be separated in normal-phase mode.
In addition, the end-caping process enables the cleaning with highly polar solvents such as water.
InertSustain Cyano columns can be used as reversed-phase columns, and they are shipped with a water/acetonitrile mixture as the shipping solvent. However, they can be used as normal-phase columns by replacing the solvent with an intermediate polar solvent before an analysis.

Figure 1 : Comparison of Normal Phase Mode and Reversed Phase Mode Analysis



Conditions

Eluent : A) Hexane
B) Ethanol
A/B = 90/10, v/v
Flow Rate : 1.0 mL/min
Col. Temp. : 40 °C
Detection : UV 220 nm

Conditions

Eluent : A) CH_3OH
B) H_2O
A/B = 40/60, v/v
Flow Rate : 1.0 mL/min
Col. Temp. : 40 °C
Detection : UV 220 nm

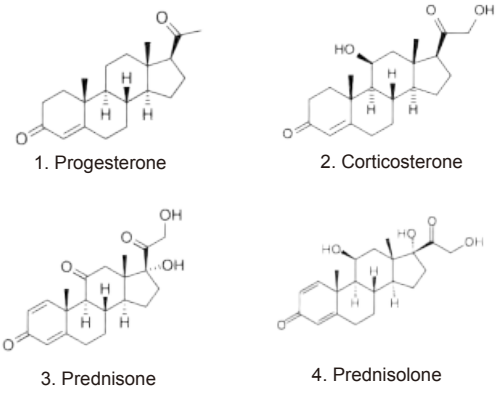
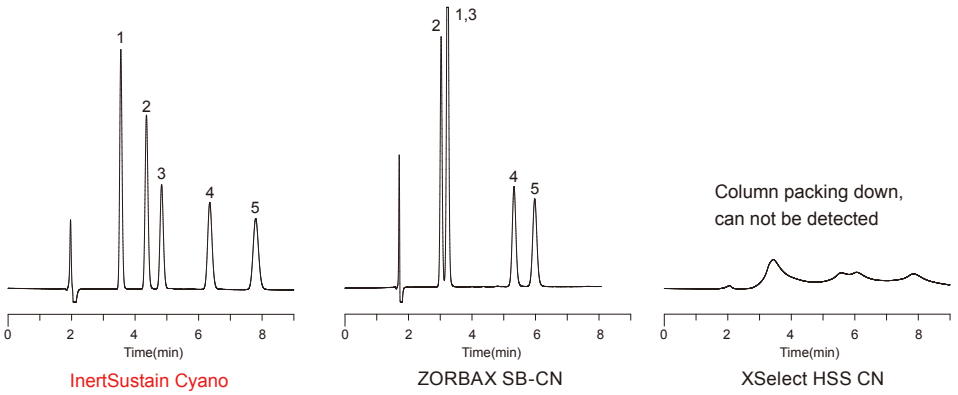


Figure 2: Comparison with Other Brands Column



Conditions

Column Size : 5 µm,150 × 4.6 mm I.D.
Eluent : A) *n*-Hexane
B) Ethanol
A/B = 90/10, v/v
Flow Rate : 1.0 mL/min
Col. Temp. : 40 °C
Detection : UV 220 nm
Sample : 1. Progesterone
2. Estrone
3. β-Estradiol
4. Corticosterone
5. Hydrocortisone

Analytical Columns

HP Series Particle Size : 3 µm 50 MPa (500 bar)	Length\I.D. (mm)	2.1	3.0	4.6	
	30	5020-89459	5020-89465	5020-89471	
	50	5020-89460	5020-89466	5020-89472	
	75	5020-89461	5020-89467	5020-89473	
	100	5020-89462	5020-89468	5020-89474	
	150	5020-89463	5020-89469	5020-89475	
	250	5020-89464	5020-89470	5020-89476	
	Length\I.D. (mm)	1.0	1.5		
	30	5020-89410	5020-89416		
	50	5020-89411	5020-89417		
	75	5020-89412	5020-89418		
	100	5020-89413	5020-89419		
	150	5020-89414	5020-89420		
	250	5020-89415	5020-89421		
Particle Size: 3 µm	Length\I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-89374	5020-89381	5020-89388	5020-89395
	50	5020-89375	5020-89382	5020-89389	5020-89396
	75	5020-89376	5020-89383	5020-89390	5020-89397
	100	5020-89377	5020-89384	5020-89391	5020-89398
	150	5020-89378	5020-89385	5020-89392	5020-89399
	250	5020-89379	5020-89386	5020-89393	5020-89400
	Length\I.D. (mm)	1.0	1.5		
	30	5020-89288	5020-89294		
	50	5020-89289	5020-89295		
	75	5020-89290	5020-89296		
	100	5020-89291	5020-89297		
	150	5020-89292	5020-89298		
	250	5020-89293	5020-89299		
Particle Size: 5 µm	Length\I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-89251	5020-89258	5020-89265	5020-89272
	50	5020-89252	5020-89259	5020-89266	5020-89273
	75	5020-89253	5020-89260	5020-89267	5020-89274
	100	5020-89254	5020-89261	5020-89268	5020-89275
	150	5020-89255	5020-89262	5020-89269	5020-89276
	250	5020-89256	5020-89263	5020-89270	5020-89277

Cartridge Guard Column E

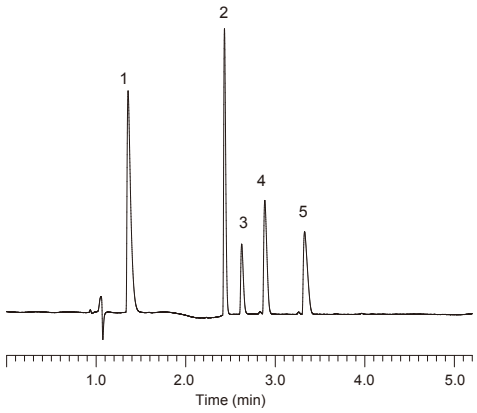
I.D. of the Analytical Column Applicable (mm)	Length (mm)	I.D. (mm)	Replacement Cartridge E Guard Column (2 pcs)		Cartridge E Holder / Cartridge Set (2 Cartridge E Guard Columns & 1 Holder)	
			Particle Size		Particle Size	
			3 µm	5 µm	3 µm	5 µm
1.0	10	1.0	5020-89449	5020-89355	5020-89450	5020-89356
1.5, 2.1		1.5	5020-89451	5020-89357	5020-89452	5020-89358
2.1, 3.0		3.0	5020-89447	5020-89353	5020-89448	5020-89354
4.0, 4.6		4.0	5020-89445	5020-89351	5020-89446	5020-89352
2.1, 3.0	20	3.0	5020-89455	5020-89361	5020-89456	5020-89362
4.0, 4.6		4.0	5020-89453	5020-89359	5020-89454	5020-89360
Holder for Cartridge Guard Column E				For 10 mm Length		5020-08500
				For 20 mm Length		5020-08550

InertSustainBio C18

- **Base Material** : **High Purity ES Silica Gel**
- **Particle Size** : **1.9 µm, 3 µm**
- **Surface Area** : **200 m^2/g**
- **Pore Size** : **200 Å (20 nm)**
- **Pore Volume** : **1.00 mL/g**
- **Functional Group** : **Octadecyl**
- **End-capping** : **Yes**
- **Carbon Loading** : **9 %**
- **USP Code** : **L1**
- **pH Range** : **1 - 10**
- **Max. Operating Pressure** : **80MPa, 800 bar for 1.9 µm columns**
  50MPa, 500 bar for 3 µm columns

InertSustain Bio C18 is a recommended HPLC column for peptide and protein analysis.
It uses a packing material with a pore size of 200Å, making it ideal in the determination of low to high molecular weight compounds (up to several tens of thousands Da).The use of extremely low-adsorption packing materials and metal-free column hardware enables analyte sharp peaks even for adsorbable analytes.

Analysis of Peptides

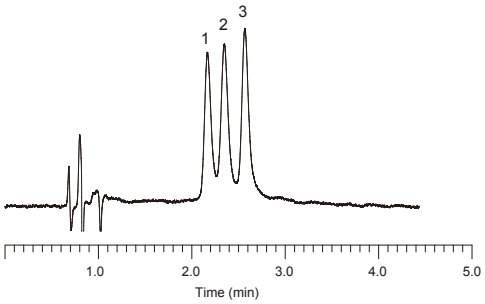


Conditions

Column : InertSustainBio C18
(1.9 µm, 100 × 2.1 mm I.D)
Eluent : A) 0.1% HCOOH in H_2O
B) 0.1% HCOOH in CH_3CN
A/B = 95/5 - 0.5 min - 70/30 - 2.5 min - 60/40
- 0.5 min - 60/40 - 0.01/min - 95/5 - 6.49 min - 95/5, v/v
Flow Rate : 0.3 mL/min
Col. Temp. : 40 ℃
Detection : UV 280 nm
Injection Vol. : 5 µL

Sample :
1. Gly-Tyr
2. Val-Tyr-Val
3. Angiotensin II
4. Methionine encephalin
5. Leucine encephalin
(50 mg/mL each)

Analysis of Oligonucleotides



Conditions

Column : InertSustainBio C18 (1.9 µm, 100 × 2.1 mm I.D)
Eluent : A) 0.1 % Triethylamine in H_2O (pH 6.3, CH_3COOH)
B) Eluent A/CH_3CN = 50/50, v/v
A/B = 83/17 - 4 min - 80/20 - 0.1 min - 83/17 - 5.9 min - 83/17, v/v
Flow Rate : 0.4 mL/min
Col. Temp. : 40 ℃
Detection : UV 260 nm
Injection Vol. : 10 µL
Sample : 1. 5′ - GTT ACA GAA TCT GAC AAG CCT AAT ACG - 3′ (27 mer)
2. 5′ - GTT ACA GAA TCT GCC AAG CCT AAT ACG - 3′ (27 mer)
3. 5′ - GTT ACA GAA TCT GTC AAG CCT AAT ACG - 3′ (27 mer)
(300 pmol/L each)

Analytical Columns

	Length \ I.D. (mm)	2.1	4.6
Particle Size: 1.9 µm	50	5020-89500	5020-87516
	100	5020-89501	5020-87517
	150	–	5020-87518
Particle Size: 3 µm	50	5020-89503	5020-87520
	100	5020-89504	5020-87521
	150	5020-89505	5020-87522
	250	5020-87519	5020-87523

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