

InertSustainSwift™ C18

Achieving separations faster than ever before



GL Sciences Inc.

InertSustainSwift C18 HPLC Columns

Increasing Efficiency, Throughput and Productivity

InertSustainSwift C18 columns are designed to deliver rapid separations with symmetric peaks to minimize analysis time as much as possible. InertSustainSwift C18 is also ideal for LC-MS and LC-MS/MS methods which offer highly sensitive results and enables MS compatible buffers to be used due to the extremely inert silica gel.

Physical Properties

Silica :	ES (Evolved Surface) Silica Gel
Particle Size :	1.9 μm , 3 μm , 5 μm
Surface Area :	200 m^2/g
Pore Size :	200 \AA (20 nm)
Pore Volume :	1.00 mL/g
Bonded Phase :	Octadecyl Groups
End-capping :	Complete
Carbon Loading :	9.0 %
USP Code :	L1
pH Range :	1.0 to 10.0

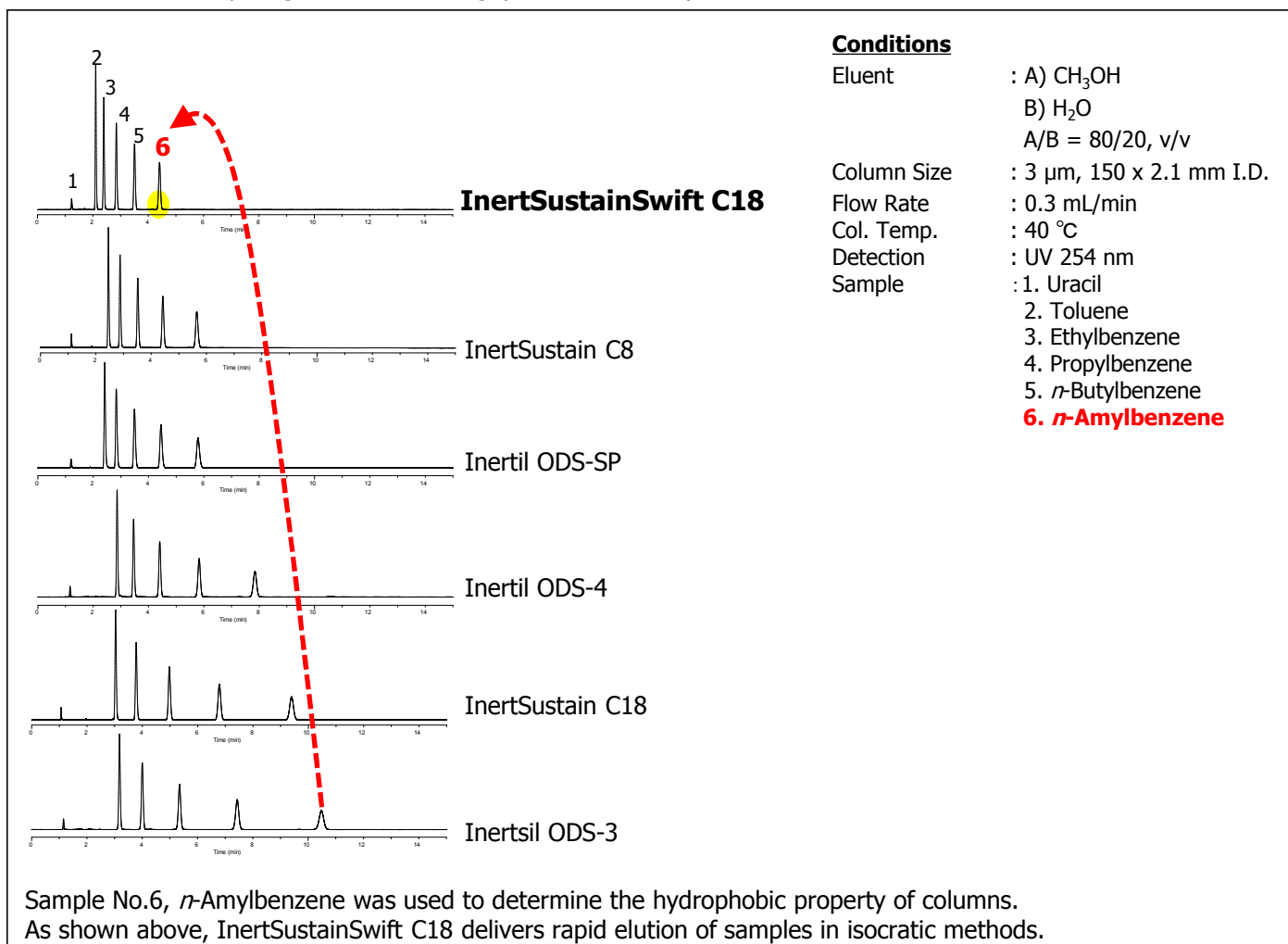


Benefits

- Rapid elution of samples in isocratic methods
- Rapid column equilibration
- Highly inert packing material results in less tailing of peaks for virtually any type of analytes
- Deliver extreme sensitivity analysis in LC-MS and LC-MS/MS methods with low column bleed
- Extreme resistance to low and high pH mobile phases
- Excellent stability to 100 % aqueous mobile phases
- Endlessly reproducible from column-to-column and batch-to-batch

Rapid Elution of Samples in Isocratic Methods

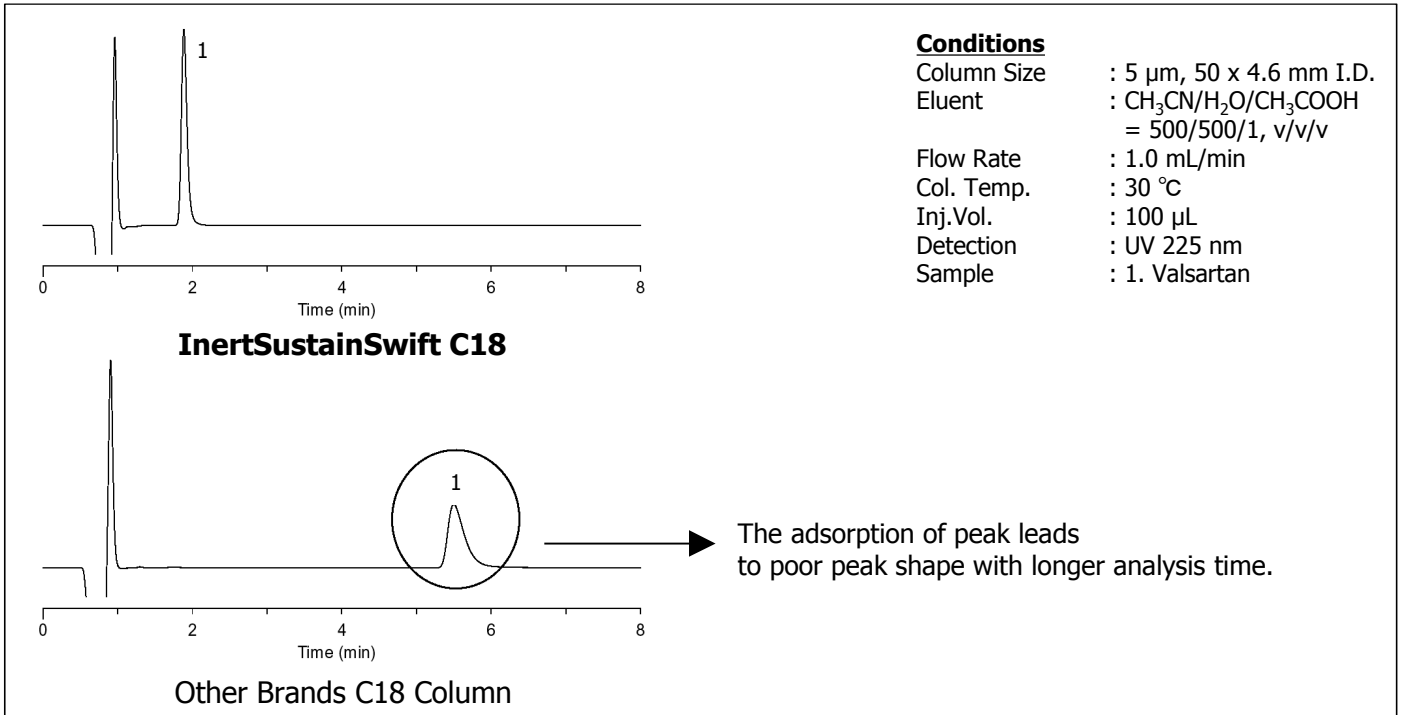
The retentivity of InertSustainSwift C18 is weaker even comparing with a conventional C8 column, which makes it ideal for methods requiring maximum throughput and efficiency.



InertSustainSwift C18 HPLC Columns

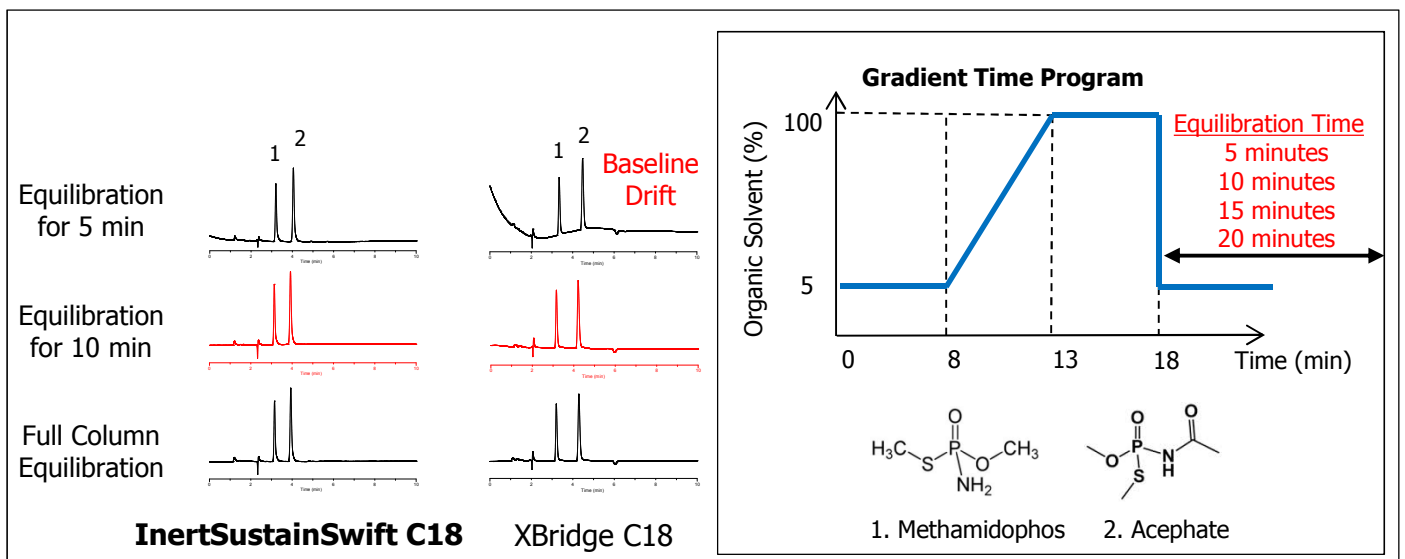
Rapid Analysis of Dissolution Test of Formulations

InertSustainSwift C18 is optimally bonded offering moderate retentivity of analytes without accumulating strong hydrophobic contaminants in the column. Most importantly, the optimized surface area (200 m²/g) and carbon load (9.0 %) to the silica gel enables rapid elution of samples in isocratic methods which creates the column to be highly efficient for dissolution test of formulations.



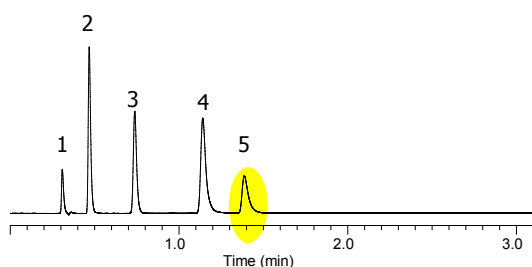
Rapid Column Equilibration

When columns are not equilibrated enough in gradient methods, irreproducible retention time of analytes, baseline drift and lower sensitivity in LC-MS and LC-MS/MS methods can be experienced. When discussing about rapid analysis in gradient methods, reducing the column equilibration time is significantly important to inject the next sample to achieve total rapid analysis. As shown below, InertSustainSwift C18 provide rapid column equilibration.



Benefits of Highly Inert Packing Material

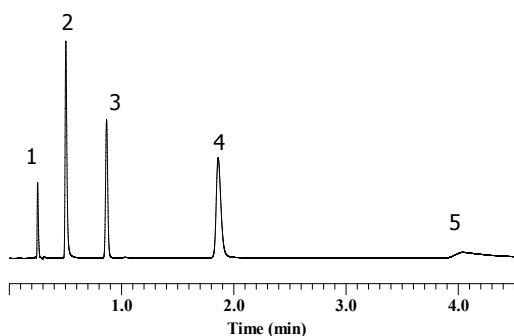
InertSustainSwift C18 employs a highly inert packing material which provides pure hydrophobic interaction between analytes without generating any secondary interaction delivering rapid results. Poorly end-capped columns often show tailing of peaks due to the presence of silanols resulting in longer analysis time.



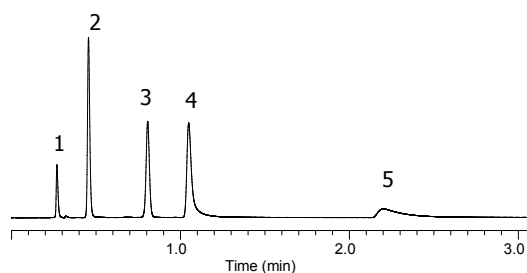
InertSustainSwift C18
1.9 μm , 50 x 2.1 mm I.D.

Conditions

Eluent : A) CH₃CN
B) 25mM K₂HPO₄ (pH 7.0, KH₂PO₄)
A/B = 30/70, v/v
Flow Rate : 0.4 mL/min
Col. Temp. : 40 °C
Detection : UV 230 nm
Injection Vol : 0.5 μL
Sample : 1:Uracil
2:Pyridine
3:Phenol
4:Berberine chloride
5:Dextromethorphan



Titan C18
1.9 μm , 50 x 2.1 mm I.D.



L column 2 ODS
2 μm , 50 x 2.1 mm I.D.

References

Test compounds for detecting the silanol effect on the elution of ionized amines in reversed-phase LC

Nobuo Tanaka, Kensuke Okusa, Yuki Suita, Yukio Otsuka, Mineo Tahara, Tohru Ikegami, Masayoshi Ohira, Masakazu Takahashi

Journal of Separation Science, Volume 33 Issue 3, Pages 348 – 358, February 2010

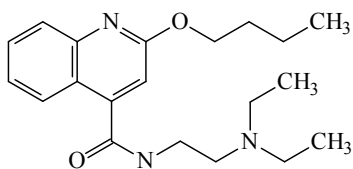
The effectiveness of several basic compounds for testing silica-based stationary phases was reviewed by applying them to recent columns for reversed-phase HPLC. Most octadecylsilylated (C18) stationary phases, prepared as a base-deactivated material from high-purity silica gel with endcapping, provided excellent peak shape and column efficiency for the bases including benzylamine and amitriptyline that once caused problems and were subsequently employed for testing silanol activities. However, a cyclic tertiary amine, dextrometorphan, was eluted as an acceptable peak from only a few columns at neutral pH. Such a more sensitive probe is expected to contribute to further improvement of the stationary phase for reversed-phase HPLC.

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

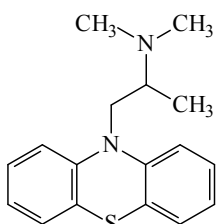
Mobile phases for LC/MS and LC-MS/MS must be volatile. Appropriate buffers are formate and acetate, while phosphate buffers are not compatible. Poorly end-capped columns contain silanols which often negatively influences separations and peak shapes or sensitivity. Such columns should use high concentrated buffers to prevent poor peak shapes, however, it generally show low sensitivity and can contaminate the instrument quickly.

As shown in the following experiment, InertSustainSwift C18 maintains excellent peak shapes and high sensitivity even at low concentration buffer which leads to less harm to the instrument.

Effects of Buffer Concentration (Ammonium Acetate) on Peak Shapes using Basic Drugs



Dibucaine (pKa 8.5)



Promethazine (pKa 9.1)

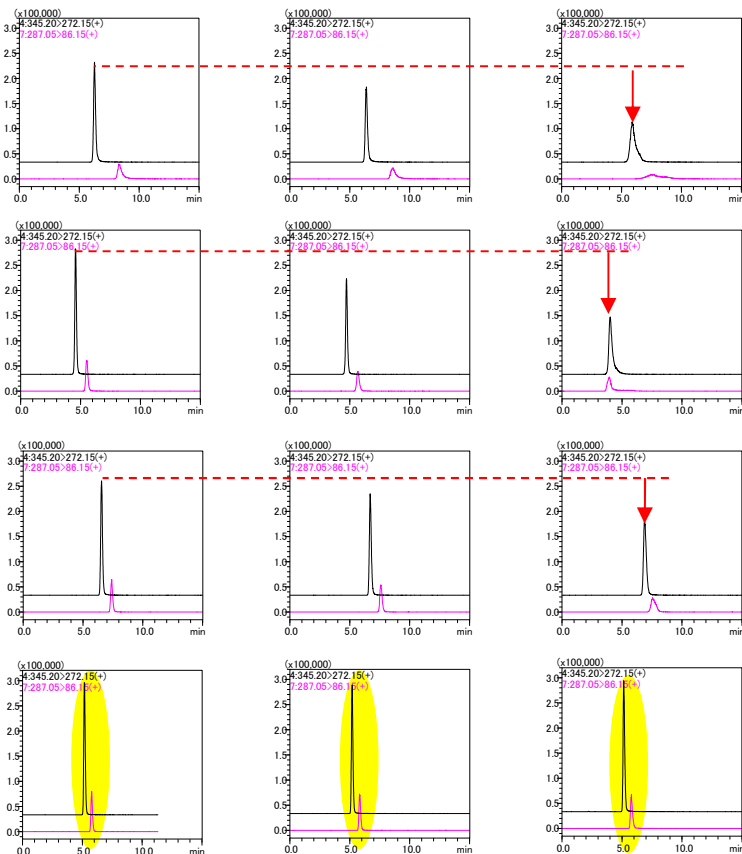
Conditions

Column size	: 3 μ m, 150 \times 2.1 mm I.D.
Eluent	: A) Ammonium Acetate in H ₂ O B) Ammonium Acetate in CH ₃ OH A/B = 30/70 ,v/v
Flow Rate	: 0.2 mL/min
Col. Temp.	: 40 $^{\circ}$ C
Detection	: LC/MS/MS (ESI, Positive, MRM)
Sample	: Each 0.1 (μ g / mL)
	Q1 > Q3
Dibcaine	: 345.20 > 272.15 (+)
Promethazine	: 287.05 > 86.15 (+)

10 mM

5 mM

1 mM



CAPCELLPAK MG III C18

Hypersil GOLD C18

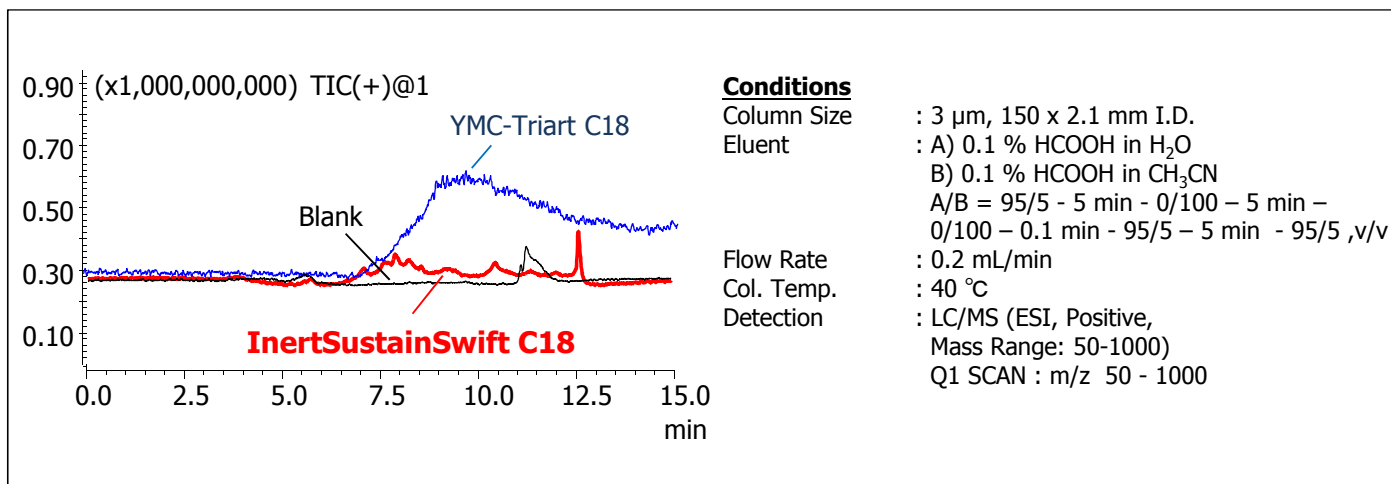
Zorbax Eclipse Plus C18

InertSustainSwift C18

Low Bleed for LC-MS and LC-MS/MS Compatibility

HPLC column bleed is a major source of background signal in LC-MS, LC-MS/MS analyses. This phase bleed occurs when the bonded phase or unreacted reagent elutes from the column during the analysis. Generally, highly end-capped columns often show high column bleed in LC-MS, LC-MS/MS applications.

As shown below, not only InertSustainSwift C18 is a highly end-capped column, but also provides low column bleed which makes it compatible for LC-MS, LC-MS/MS methods.



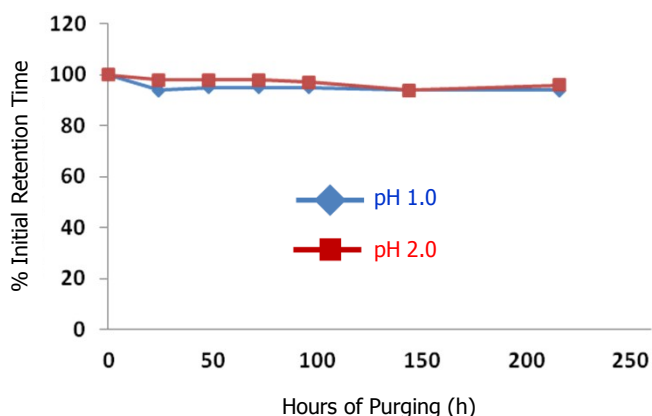
Access to the latest pharmaceutical, life science, environmental and food applications at www.glsciences.com/tech/inertsearch

Extreme Resistance to Low and High pH Mobile Phases

Dissolution testing is a very important testing in the pharmaceutical industry, which is widely used in formulation development monitoring the manufacturing process and quality control. The dissolution method development generally includes a pH solubility profile of the drug substance. In these testing, from low to neutral pH dissolution media are generally used. However, low pH dissolution media tends to cause poor column lifetime due to the acid hydrolysis of the bonded phase.

As shown below, InertSustainSwift C18 not only show high resistance to low pH but also to high pH media due to the usage of a radically new type of silica, in which the surface of the silica is uniquely modified, enabling precise control of the silica properties.

Low pH Resistance Test



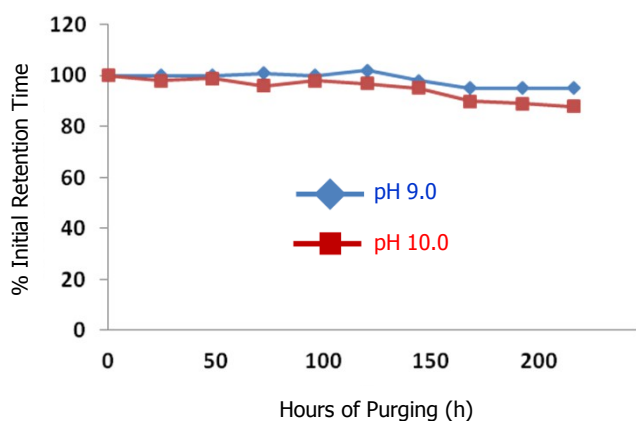
Conditions

Purging Solvent : 1 % TFA (pH 1.0)/CH₃CN = 90/10, v/v
Purging Solvent : 0.1 % TFA (pH 2.0)/CH₃CN = 90/10, v/v
Column Temp. : 60 °C
Sample : Naphthalene

Testing Procedure

- 1) Purging solvent is introduced into column.
- 2) The column is then flushed with 10 % CH₃CN .
- 3) Naphthalene is used to verify the % initial retention.

High pH Resistance Test



Conditions

Purging Solvent : 50 mM TEA (pH 9.0)/CH₃OH = 70/30, v/v
Purging Solvent : 50 mM TEA (pH 10.0)/CH₃OH = 70/30, v/v
Column Temp. : 50 °C
Sample : Naphthalene

Testing Procedure

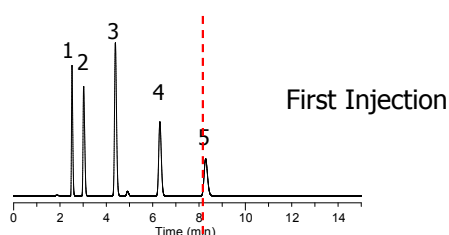
- 1) Purging solvent is introduced into column.
- 2) The column is then flushed with 30 % CH₃OH .
- 3) Naphthalene is used to verify the % initial retention.

Excellent Stability to 100 % Aqueous Mobile Phases

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

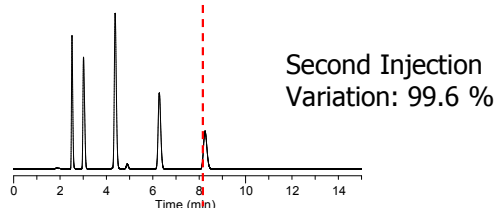
As shown in the following test, InertSustainSwift C18 demonstrates excellent stability to dewetting guaranteeing highly stable, reliable and reproducible chromatograms.

Dewetting Test



Conditions

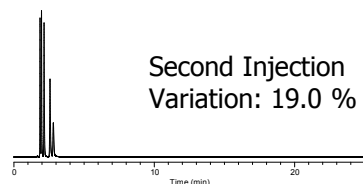
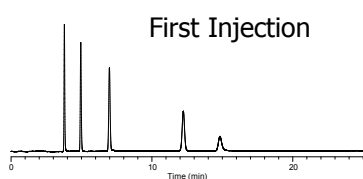
Column : 5 μ m, 250 x 4.6 mm I.D.
 Eluent : 100 % H₂O
 Flow rate : 1.0 mL/min
 Col. Temp. : 40 °C
 Detection : UV 254 nm
 Sample : 1.Cytosine 2.Uracil
 3.Guanine 4.Thymine
 5.Adenine



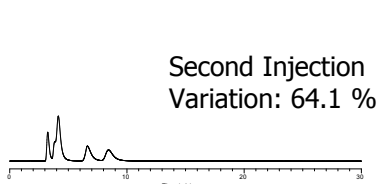
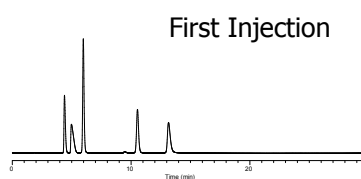
Testing Procedure

- 1) 100 % water is introduced into column over 60 minutes.
- 2) Conduct analysis.
- 3) Stop flow for 15 minutes.
- 4) 100 % water is introduced again into column over 30 minutes.
- 5) Stop flow for 15 minutes again.
- 6) Conduct analysis.

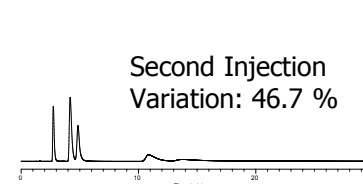
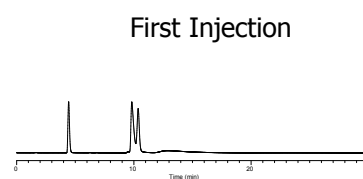
InertSustainSwift C18



Luna C18(2)



XBridge C18



Hypersil BDS C18

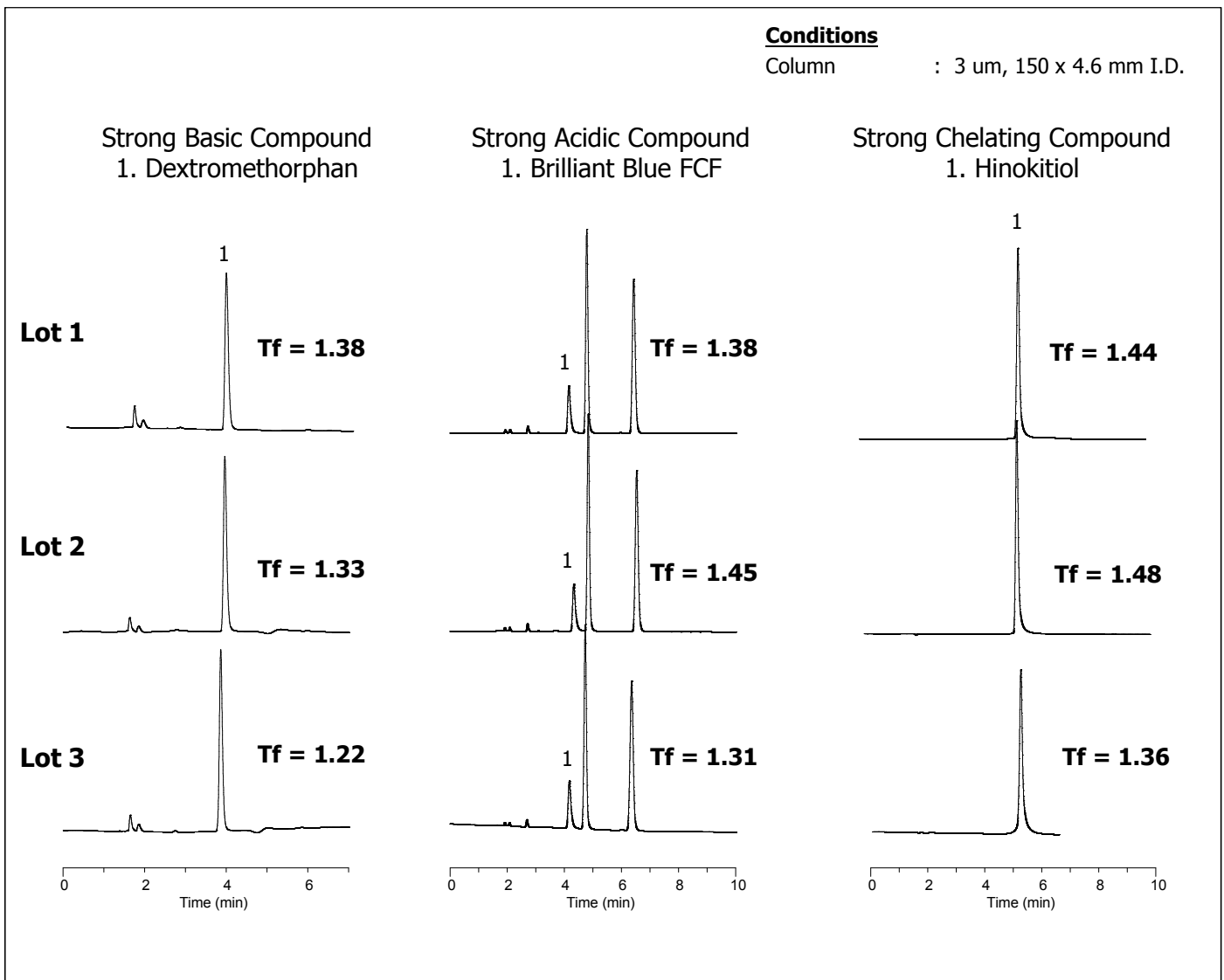
As shown above, other columns are apparently not compatible with 100 % aqueous mobile phase as it showed a sudden loss of retention due to a dewetting phenomenon.

InertSustainSwift C18 HPLC Columns

Endlessly Reproducible from Column-to-Column and Batch-to-Batch

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

To maintain precise product reproducibility, strict chromatographic tests for inertness, durability, theoretical plates and reproducibility of retention time are employed.

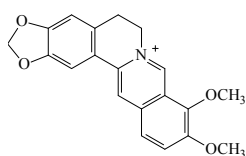


Comparison of Performance

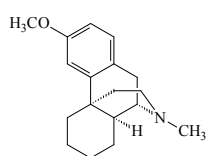
By conducting the 3 tests below, we can evaluate the degree of inertness of the column. To strictly evaluate all columns, the below mentioned samples were used, which are all known as strong adsorptive compounds.

Strong Basic Compound Test

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



4:Berberine Chloride



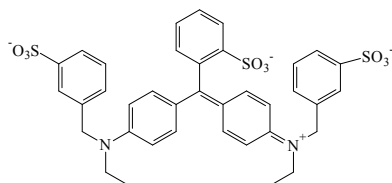
5:Dextromethorphan

Conditions

Column	: 3 μm, 150 x 2.1 mm I.D.
Eluent	: A) CH ₃ CN B) 25 mM K ₂ HPO ₄ (pH 7.0, KH ₂ PO ₄) A/B = 30/70,v/v
Flow Rate	: 0.3 mL/min
Col. Temp.	: 40 °C
Detection	: UV 230 nm
Injection Vol	: 1 μL
Sample	: 1:Uracil 2:Pyridine 3:Phenol 4:Berberine Chloride 5:Dextromethorphan

Strong Acidic Compound Test

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



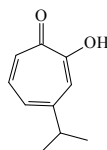
1:Brilliant Blue FCF

Conditions

Column	: 3 μm, 150 x 2.1 mm I.D.
Eluent	: A) CH ₃ CN B) 0.1 % H ₃ PO ₄ A/B = 25/75,v/v
Flow Rate	: 0.3 mL/min
Col. Temp.	: 40 °C
Detection	: UV 254 nm
Injection Vol	: 1 μL
Sample	: 1:Brilliant Blue FCF 2:4-Ethylbenzoic acid 3:Salicylic acid

Strong Chelating Compound Test

Hinokitiol is a strong chelating compound, which coordinately binds with the surface of residual trace metal impurities, resulting in severe tailing. However, the peak shape improves as the injection increases since the surface of the packing material of the adsorption active sites eventually become masked.



1: β-Thujaplicin (Hinokitiol)

Conditions

Column	: 3 μm, 150 x 2.1 mm I.D.
Eluent	: A) CH ₃ CN B) 0.1 % H ₃ PO ₄ A/B = 40/60
Flow Rate	: 0.3 mL/min
Col. Temp.	: 40 °C
Detection	: UV 254 nm
Injection Vol	: 1 μL
Sample	: 1: β-Thujaplicin (Hinokitiol)

Comparison of Performance 1

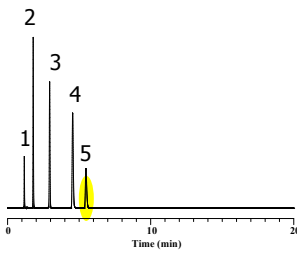
Strong Basic Compound Test

Strong Acidic Compound Test

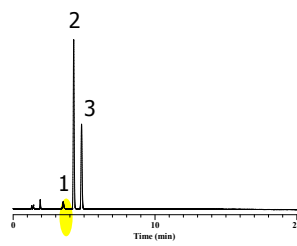
Strong Chelating Compound Test

InertSustainSwift C18

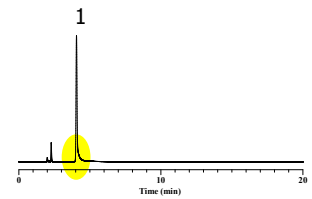
1: Uracil 2: Pyridine 3: Phenol
4: Berberine chloride 5: Dextromethorphan



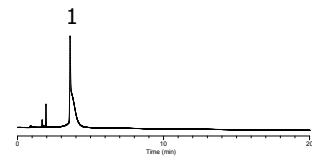
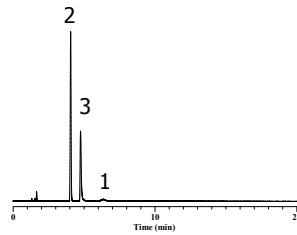
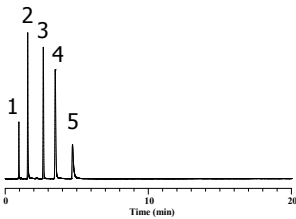
1: Brilliant Blue FCF
2: 4-Ethylbenzoic acid
3: Salicylic acid



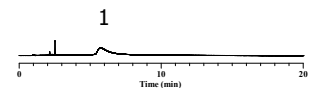
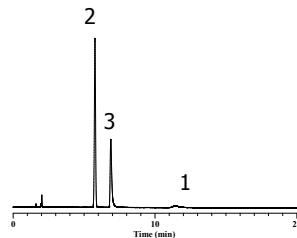
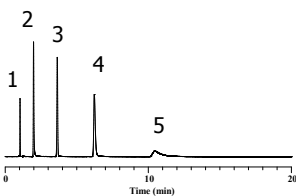
1: Hinokitiol



Gemini NX-C18



Luna C18(2)



Comparison of Performance 2

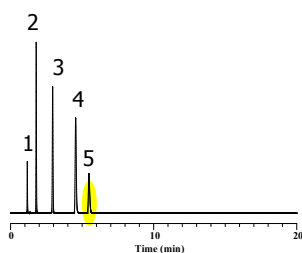
Strong Basic Compound Test

Strong Acidic Compound Test

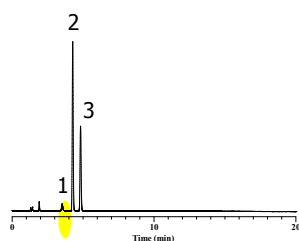
Strong Chelating Compound Test

InertSustainSwift C18

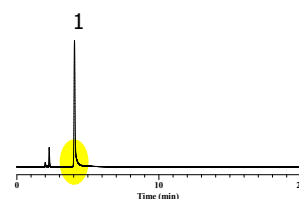
1: Uracil 2: Pyridine 3: Phenol
4: Berberine chloride 5: Dextromethorphan



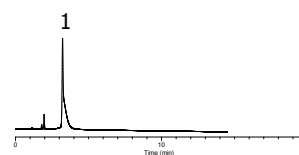
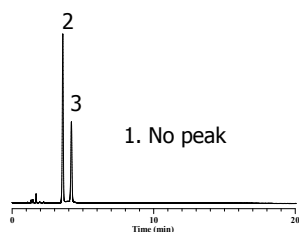
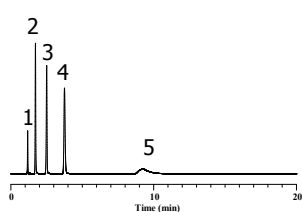
1: Brilliant Blue FCF
2: 4-Ethylbenzoic acid
3: Salicylic acid



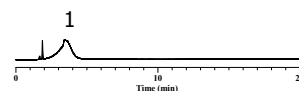
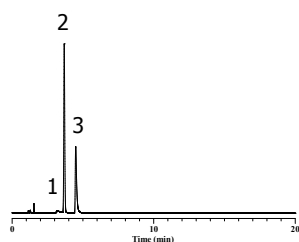
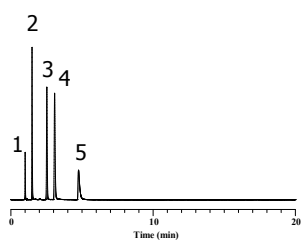
1: Hinokitiol



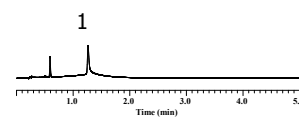
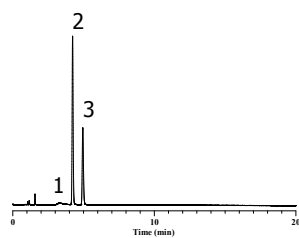
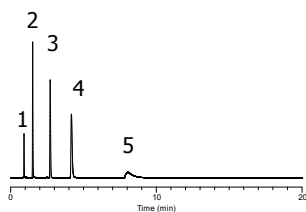
Hypersil GOLD C18



XBridge C18



Zorbax Eclipse Plus C18



InertSustainSwift C18 HPLC Columns

InertSustainSwift C18 HPLC columns are Excellent for...

- Tablet/Capsule Dissolution Test
- Bioequivalence Test
- Continent Uniformity Test
- LC-MS, LC-MS/MS Methods
- Appropriate for Peptide and Oligonucleotide samples as well

Analytical Columns

Cat No.	Description	Max. Operating Pressure (MPa)
5020-88228	InertSustainSwift C18 1.9 μ m 2.1x50mm	80
5020-88230	InertSustainSwift C18 1.9 μ m 2.1x100mm	80
5020-88231	InertSustainSwift C18 1.9 μ m 2.1x150mm	80
5020-88233	InertSustainSwift C18 1.9 μ m 3.0x50mm	80
5020-88235	InertSustainSwift C18 1.9 μ m 3.0x100mm	80
5020-88236	InertSustainSwift C18 1.9 μ m 3.0x150mm	80
5020-88210	InertSustainSwift C18 HP 3 μ m 2.1x50mm	50
5020-88212	InertSustainSwift C18 HP 3 μ m 2.1x100mm	50
5020-88213	InertSustainSwift C18 HP 3 μ m 2.1x150mm	50
5020-88214	InertSustainSwift C18 HP 3 μ m 2.1x250mm	50
5020-88216	InertSustainSwift C18 HP 3 μ m 3.0x50mm	50
5020-88218	InertSustainSwift C18 HP 3 μ m 3.0x100mm	50
5020-88219	InertSustainSwift C18 HP 3 μ m 3.0x150mm	50
5020-88220	InertSustainSwift C18 HP 3 μ m 3.0x250mm	50
5020-88222	InertSustainSwift C18 HP 3 μ m 4.6x50mm	50
5020-88224	InertSustainSwift C18 HP 3 μ m 4.6x100mm	50
5020-88225	InertSustainSwift C18 HP 3 μ m 4.6x150mm	50
5020-88226	InertSustainSwift C18 HP 3 μ m 4.6x250mm	50

* End-fittings are 1/16" Parker style.

Analytical Columns

Cat No.	Description	Max. Operating Pressure (MPa)
5020-88160	InertSustainSwift C18 3 µm 1.0x 30mm	20
5020-88161	InertSustainSwift C18 3 µm 1.0x 50mm	20
5020-88162	InertSustainSwift C18 3 µm 1.0x 75mm	20
5020-88163	InertSustainSwift C18 3 µm 1.0x100mm	20
5020-88164	InertSustainSwift C18 3 µm 1.0x150mm	20
5020-88165	InertSustainSwift C18 3 µm 1.0x250mm	20
5020-88166	InertSustainSwift C18 3 µm 1.5x 30mm	20
5020-88167	InertSustainSwift C18 3 µm 1.5x 50mm	20
5020-88168	InertSustainSwift C18 3 µm 1.5x 75mm	20
5020-88169	InertSustainSwift C18 3 µm 1.5x100mm	20
5020-88170	InertSustainSwift C18 3 µm 1.5x150mm	20
5020-88171	InertSustainSwift C18 3 µm 1.5x250mm	20
5020-88124	InertSustainSwift C18 3 µm 2.1x 30mm	20
5020-88125	InertSustainSwift C18 3 µm 2.1x 50mm	20
5020-88126	InertSustainSwift C18 3 µm 2.1x 75mm	20
5020-88127	InertSustainSwift C18 3 µm 2.1x100mm	20
5020-88253	InertSustainSwift C18 3 µm 2.1x125mm	20
5020-88128	InertSustainSwift C18 3 µm 2.1x150mm	20
5020-88129	InertSustainSwift C18 3 µm 2.1x250mm	20
5020-88131	InertSustainSwift C18 3 µm 3.0x 30mm	20
5020-88132	InertSustainSwift C18 3 µm 3.0x 50mm	20
5020-88133	InertSustainSwift C18 3 µm 3.0x 75mm	20
5020-88134	InertSustainSwift C18 3 µm 3.0x100mm	20
5020-88254	InertSustainSwift C18 3 µm 3.0x125mm	20
5020-88135	InertSustainSwift C18 3 µm 3.0x150mm	20
5020-88136	InertSustainSwift C18 3 µm 3.0x250mm	20
5020-88138	InertSustainSwift C18 3 µm 4.0x 30mm	20
5020-88139	InertSustainSwift C18 3 µm 4.0x 50mm	20
5020-88140	InertSustainSwift C18 3 µm 4.0x 75mm	20
5020-88141	InertSustainSwift C18 3 µm 4.0x100mm	20
5020-88255	InertSustainSwift C18 3 µm 4.0x125mm	20
5020-88142	InertSustainSwift C18 3 µm 4.0x150mm	20
5020-88143	InertSustainSwift C18 3 µm 4.0x250mm	20
5020-88145	InertSustainSwift C18 3 µm 4.6x 30mm	20
5020-88146	InertSustainSwift C18 3 µm 4.6x 50mm	20
5020-88147	InertSustainSwift C18 3 µm 4.6x 75mm	20
5020-88148	InertSustainSwift C18 3 µm 4.6x100mm	20
5020-88256	InertSustainSwift C18 3 µm 4.6x125mm	20
5020-88149	InertSustainSwift C18 3 µm 4.6x150mm	20
5020-88150	InertSustainSwift C18 3 µm 4.6x250mm	20

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

InertSustainSwift C18 HPLC Columns

Analytical Columns

Cat No.	Description	Max. Operating Pressure (MPa)
5020-88038	InertSustainSwift C18 5 µm 1.0x 30mm	20
5020-88039	InertSustainSwift C18 5 µm 1.0x 50mm	20
5020-88040	InertSustainSwift C18 5 µm 1.0x 75mm	20
5020-88041	InertSustainSwift C18 5 µm 1.0x100mm	20
5020-88042	InertSustainSwift C18 5 µm 1.0x150mm	20
5020-88043	InertSustainSwift C18 5 µm 1.0x250mm	20
5020-88044	InertSustainSwift C18 5 µm 1.5x 30mm	20
5020-88045	InertSustainSwift C18 5 µm 1.5x 50mm	20
5020-88046	InertSustainSwift C18 5 µm 1.5x 75mm	20
5020-88047	InertSustainSwift C18 5 µm 1.5x100mm	20
5020-88048	InertSustainSwift C18 5 µm 1.5x150mm	20
5020-88049	InertSustainSwift C18 5 µm 1.5x250mm	20
5020-88001	InertSustainSwift C18 5 µm 2.1x 30mm	20
5020-88002	InertSustainSwift C18 5 µm 2.1x 50mm	20
5020-88003	InertSustainSwift C18 5 µm 2.1x 75mm	20
5020-88004	InertSustainSwift C18 5 µm 2.1x100mm	20
5020-88249	InertSustainSwift C18 5 µm 2.1x125mm	20
5020-88005	InertSustainSwift C18 5 µm 2.1x150mm	20
5020-88006	InertSustainSwift C18 5 µm 2.1x250mm	20
5020-88008	InertSustainSwift C18 5 µm 3.0x 30mm	20
5020-88009	InertSustainSwift C18 5 µm 3.0x 50mm	20
5020-88010	InertSustainSwift C18 5 µm 3.0x 75mm	20
5020-88011	InertSustainSwift C18 5 µm 3.0x100mm	20
5020-88250	InertSustainSwift C18 5 µm 3.0x125mm	20
5020-88012	InertSustainSwift C18 5 µm 3.0x150mm	20
5020-88013	InertSustainSwift C18 5 µm 3.0x250mm	20
5020-88015	InertSustainSwift C18 5 µm 4.0x 30mm	20
5020-88016	InertSustainSwift C18 5 µm 4.0x 50mm	20
5020-88017	InertSustainSwift C18 5 µm 4.0x 75mm	20
5020-88018	InertSustainSwift C18 5 µm 4.0x100mm	20
5020-88251	InertSustainSwift C18 5 µm 4.0x125mm	20
5020-88019	InertSustainSwift C18 5 µm 4.0x150mm	20
5020-88020	InertSustainSwift C18 5 µm 4.0x250mm	20
5020-88022	InertSustainSwift C18 5 µm 4.6x 30mm	20
5020-88023	InertSustainSwift C18 5 µm 4.6x 50mm	20
5020-88024	InertSustainSwift C18 5 µm 4.6x 75mm	20
5020-88025	InertSustainSwift C18 5 µm 4.6x100mm	20
5020-88252	InertSustainSwift C18 5 µm 4.6x125mm	20
5020-88026	InertSustainSwift C18 5 µm 4.6x150mm	20
5020-88027	InertSustainSwift C18 5 µm 4.6x250mm	20

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

Guard Columns for UHPLC

Cat No.	Description	Max. Operating Pressure (MPa)
5020-08630	Holder for Guard Columns for UHPLC	-
5020-88244	Guard Columns for UHPLC, Holder/Cartridge Set, 1 Holder with 2 pcs 1.5x10 mm Cartridges, InertSustainSwift C18 1.9 µm	80
5020-88246	Guard Columns for UHPLC, Holder/Cartridge Set, 1 Holder with 2 pcs 2.1x10 mm Cartridges, InertSustainSwift C18 1.9 µm	80
5020-88248	Guard Columns for UHPLC, Holder/Cartridge Set, 1 Holder with 2 pcs 3.0x10 mm Cartridges, InertSustainSwift C18 1.9 µm	80
5020-88243	Guard Columns for UHPLC, Holder/Cartridge Set, 1 Holder with 2 pcs 1.5x10 mm Cartridges, InertSustainSwift C18 3 µm	80
5020-88245	Guard Columns for UHPLC, Holder/Cartridge Set, 1 Holder with 2 pcs 2.1x10 mm Cartridges, InertSustainSwift C18 3 µm	80
5020-88247	Guard Columns for UHPLC, Holder/Cartridge Set, 1 Holder with 2 pcs 3.0x10 mm Cartridges, InertSustainSwift C18 3 µm	80
5020-88238	Guard Columns for UHPLC, 1.5x10 mm, 2 pcs, InertSustainSwift C18 1.9 µm	80
5020-88240	Guard Columns for UHPLC, 2.1x10 mm, 2 pcs, InertSustainSwift C18 1.9 µm	80
5020-88242	Guard Columns for UHPLC, 3.0x10 mm, 2 pcs, InertSustainSwift C18 1.9 µm	80
5020-88237	Guard Columns for UHPLC, 1.5x10 mm, 2 pcs, InertSustainSwift C18 3 µm	80
5020-88239	Guard Columns for UHPLC, 2.1x10 mm, 2 pcs, InertSustainSwift C18 3 µm	80
5020-88241	Guard Columns for UHPLC, 3.0x10 mm, 2 pcs, InertSustainSwift C18 3 µm	80

Cartridge Guard Column Ei (Non-Metal)

Cat#	Description	Max. Operating Pressure (MPa)
5020-08650	Holder for 10 mm, Cartridge Guard Column Ei	-
5020-88120	Cartridge Ei Holder/Cartridge Set, 1 Holder with 2 pcs 1.0x10 mm Cartridges, InertSustainSwift C18 5 µm	20
5020-88118	Cartridge Ei Holder/Cartridge Set, 1 Holder with 2 pcs 2.1x10 mm Cartridges, InertSustainSwift C18 5 µm	20
5020-88116	Cartridge Ei Holder/Cartridge Set, 1 Holder with 2 pcs 3.0x10 mm Cartridges, InertSustainSwift C18 5 µm	20
5020-88114	Cartridge Ei Holder/Cartridge Set, 1 Holder with 2 pcs 4.0x10 mm Cartridges, InertSustainSwift C18 5 µm	20
5020-88119	Cartridge Ei Replacement Cartridges, 2 pcs 1.0x10mm, InertSustainSwift C18 5 µm	20
5020-88117	Cartridge Ei Replacement Cartridges, 2 pcs 2.1x10mm, InertSustainSwift C18 5 µm	20
5020-88115	Cartridge Ei Replacement Cartridges, 2 pcs 3.0x10mm, InertSustainSwift C18 5 µm	20
5020-88113	Cartridge Ei Replacement Cartridges, 2 pcs 4.0x10mm, InertSustainSwift C18 5 µm	20

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

InertSustainSwift C18 HPLC Columns

Cartridge Guard Column E

Cat No.	Description	Max. Operating Pressure (MPa)
5020-08500	Holder for 10 mm, Cartridge Guard Column E	-
5020-08550	Holder for 20 mm, Cartridge Guard Column E	-
5020-88200	Cartridge E Holder/Cartridge Set, 1 Holder with 2 pcs 1.0x10 mm Cartridges, InertSustainSwift C18 3 µm	20
5020-88202	Cartridge E Holder/Cartridge Set, 1 Holder with 2 pcs 1.5x10 mm Cartridges, InertSustainSwift C18 3 µm	20
5020-88198	Cartridge E Holder/Cartridge Set, 1 Holder with 2 pcs 3.0x10 mm Cartridges, InertSustainSwift C18 3 µm	20
5020-88196	Cartridge E Holder/Cartridge Set, 1 Holder with 2 pcs 4.0x10 mm Cartridges, InertSustainSwift C18 3 µm	20
5020-88206	Cartridge E Holder/Cartridge Set, 1 Holder with 2 pcs 3.0x20 mm Cartridges, InertSustainSwift C18 3 µm	20
5020-88204	Cartridge E Holder/Cartridge Set, 1 Holder with 2 pcs 4.0x20 mm Cartridges, InertSustainSwift C18 3 µm	20
5020-88106	Cartridge E Holder/Cartridge Set, 1 Holder with 2 pcs 1.0x10 mm Cartridges, InertSustainSwift C18 5 µm	20
5020-88108	Cartridge E Holder/Cartridge Set, 1 Holder with 2 pcs 1.5x10 mm Cartridges, InertSustainSwift C18 5 µm	20
5020-88104	Cartridge E Holder/Cartridge Set, 1 Holder with 2 pcs 3.0x10 mm Cartridges, InertSustainSwift C18 5 µm	20
5020-88102	Cartridge E Holder/Cartridge Set, 1 Holder with 2 pcs 4.0x10 mm Cartridges, InertSustainSwift C18 5 µm	20
5020-88112	Cartridge E Holder/Cartridge Set, 1 Holder with 2 pcs 3.0x20 mm Cartridges, InertSustainSwift C18 5 µm	20
5020-88110	Cartridge E Holder/Cartridge Set, 1 Holder with 2 pcs 4.0x20 mm Cartridges, InertSustainSwift C18 5 µm	20
5020-88199	Cartridge E Replacement Cartridges, 2 pcs 1.0x10mm, InertSustainSwift C18 3 µm	20
5020-88201	Cartridge E Replacement Cartridges, 2 pcs 1.5x10mm, InertSustainSwift C18 3 µm	20
5020-88197	Cartridge E Replacement Cartridges, 2 pcs 3.0x10mm, InertSustainSwift C18 3 µm	20
5020-88195	Cartridge E Replacement Cartridges, 2 pcs 4.0x10mm, InertSustainSwift C18 3 µm	20
5020-88205	Cartridge E Replacement Cartridges, 2 pcs 3.0x20mm, InertSustainSwift C18 3 µm	20
5020-88203	Cartridge E Replacement Cartridges, 2 pcs 4.0x20mm, InertSustainSwift C18 3 µm	20
5020-88105	Cartridge E Replacement Cartridges, 2 pcs 1.0x10mm, InertSustainSwift C18 5 µm	20
5020-88107	Cartridge E Replacement Cartridges, 2 pcs 1.5x10mm, InertSustainSwift C18 5 µm	20
5020-88103	Cartridge E Replacement Cartridges, 2 pcs 3.0x10mm, InertSustainSwift C18 5 µm	20
5020-88101	Cartridge E Replacement Cartridges, 2 pcs 4.0x10mm, InertSustainSwift C18 5 µm	20
5020-88111	Cartridge E Replacement Cartridges, 2 pcs 3.0x20mm, InertSustainSwift C18 5 µm	20
5020-88109	Cartridge E Replacement Cartridges, 2 pcs 4.0x20mm, InertSustainSwift C18 5 µm	20

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

GL Cart Guard Column

Cat No.	Description	Max. Operating Pressure (MPa)
5020-08710	Holder for GL Cart Multipurpose Type	-
5020-88208	GL Cart Holder/Cartridge Set, 1 Holder with 5 pcs 4.6x5 mm Cartridges, InertSustainSwift C18 3 µm	20
5020-88207	GL Cart Replacement Cartridges, 10 pcs 4.6x5 mm, InertSustainSwift C18 3 µm	20
5020-88122	GL Cart Holder/Cartridge Set, 1 Holder with 5 pcs 4.6x5 mm Cartridges, InertSustainSwift C18 5 µm	20
5020-88121	GL Cart Replacement Cartridges, 10 pcs 4.6x5 mm, InertSustainSwift C18 5 µm	20

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

Conventional Guard Column

Cat No.	Description	Max. Operating Pressure (MPa)
5020-88175	Guard Column 1.0x33mm InertSustainSwift C18 3 µm	20
5020-88173	Guard Column 1.0x50mm InertSustainSwift C18 3 µm	20
5020-88174	Guard Column 1.5x33mm InertSustainSwift C18 3 µm	20
5020-88172	Guard Column 1.5x50mm InertSustainSwift C18 3 µm	20
5020-88159	Guard Column 2.1x33mm InertSustainSwift C18 3 µm	20
5020-88154	Guard Column 2.1x50mm InertSustainSwift C18 3 µm	20
5020-88158	Guard Column 3.0x33mm InertSustainSwift C18 3 µm	20
5020-88153	Guard Column 3.0x50mm InertSustainSwift C18 3 µm	20
5020-88155	Guard Column 4.0x10mm InertSustainSwift C18 3 µm	20
5020-88157	Guard Column 4.0x33mm InertSustainSwift C18 3 µm	20
5020-88152	Guard Column 4.0x50mm InertSustainSwift C18 3 µm	20
5020-88156	Guard Column 4.6x33mm InertSustainSwift C18 3 µm	20
5020-88151	Guard Column 4.6x50mm InertSustainSwift C18 3 µm	20
5020-88053	Guard Column 1.0x33mm InertSustainSwift C18 5 µm	20
5020-88051	Guard Column 1.0x50mm InertSustainSwift C18 5 µm	20
5020-88052	Guard Column 1.5x33mm InertSustainSwift C18 5 µm	20
5020-88050	Guard Column 1.5x50mm InertSustainSwift C18 5 µm	20
5020-88037	Guard Column 2.1x33mm InertSustainSwift C18 5 µm	20
5020-88032	Guard Column 2.1x50mm InertSustainSwift C18 5 µm	20
5020-88036	Guard Column 3.0x33mm InertSustainSwift C18 5 µm	20
5020-88031	Guard Column 3.0x50mm InertSustainSwift C18 5 µm	20
5020-88033	Guard Column 4.0x10mm InertSustainSwift C18 5 µm	20
5020-88035	Guard Column 4.0x33mm InertSustainSwift C18 5 µm	20
5020-88030	Guard Column 4.0x50mm InertSustainSwift C18 5 µm	20
5020-88034	Guard Column 4.6x33mm InertSustainSwift C18 5 µm	20
5020-88029	Guard Column 4.6x50mm InertSustainSwift C18 5 µm	20

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

InertSustainSwift C18 HPLC Columns

Preparative Columns

Cat No.	Description	Max. Operating Pressure (MPa)
5020-88054	InertSustainSwift C18 5 µm 6.0x 50mm	20
5020-88055	InertSustainSwift C18 5 µm 6.0x100mm	20
5020-88056	InertSustainSwift C18 5 µm 6.0x150mm	20
5020-88057	InertSustainSwift C18 5 µm 6.0x250mm	20
5020-88058	InertSustainSwift C18 5 µm 7.6x 50mm	20
5020-88059	InertSustainSwift C18 5 µm 7.6x100mm	20
5020-88060	InertSustainSwift C18 5 µm 7.6x150mm	20
5020-88061	InertSustainSwift C18 5 µm 7.6x250mm	20
5020-88062	InertSustainSwift C18 5 µm 10x 50mm	20
5020-88063	InertSustainSwift C18 5 µm 10x100mm	20
5020-88064	InertSustainSwift C18 5 µm 10x150mm	20
5020-88065	InertSustainSwift C18 5 µm 10x250mm	20
5020-88066	InertSustainSwift C18 5 µm 14x 50mm	20
5020-88067	InertSustainSwift C18 5 µm 14x100mm	20
5020-88068	InertSustainSwift C18 5 µm 14x150mm	20
5020-88069	InertSustainSwift C18 5 µm 14x250mm	20
5020-88070	InertSustainSwift C18 5 µm 20x 50mm	20
5020-88071	InertSustainSwift C18 5 µm 20x100mm	20
5020-88072	InertSustainSwift C18 5 µm 20x150mm	20
5020-88073	InertSustainSwift C18 5 µm 20x250mm	20

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

Guard Columns for Preparative Columns

Cat No.	Description	Max. Operating Pressure (MPa)
5020-88074	InertSustainSwift C18 5 µm 6.0x 50mm Guard	20
5020-88075	InertSustainSwift C18 5 µm 7.6x 50mm Guard	20
5020-88076	InertSustainSwift C18 5 µm 10x 50mm Guard	20
5020-88077	InertSustainSwift C18 5 µm 14x 50mm Guard	20
5020-88078	InertSustainSwift C18 5 µm 20x 50mm Guard	20

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

Cartridge Guard Columns for Preparative Columns

Cat No.	Description	Max. Operating Pressure (MPa)
5020-06920	Holder for Prep Guard Cartridge	-
5020-88079	Prep Guard Cartridges, 2 pcs, 7.6x30 mm, InertSustainSwift C18 5 µm	20
5020-88080	Prep Guard Holder/Cartridge Set, 1 Holder with 2 pcs 7.6x30 mm Cartridges, InertSustainSwift C18 5 µm	20

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

Capillary Columns

Cat No.	Description	Max. Operating Pressure (MPa)
5020-88183	Capillary EX-NANO 0.05x 50mm InertSustainSwift C18 3 µm	15
5020-88184	Capillary EX-NANO 0.05x150mm InertSustainSwift C18 3 µm	15
5020-88185	Capillary EX-NANO 0.05x250mm InertSustainSwift C18 3 µm	15
5020-88186	Capillary EX-NANO 0.075x 50mm InertSustainSwift C18 3 µm	15
5020-88187	Capillary EX-NANO 0.075x150mm InertSustainSwift C18 3 µm	15
5020-88188	Capillary EX-NANO 0.075x250mm InertSustainSwift C18 3 µm	15
5020-88189	Capillary EX-NANO 0.1x 50mm InertSustainSwift C18 3 µm	15
5020-88190	Capillary EX-NANO 0.1x150mm InertSustainSwift C18 3 µm	15
5020-88191	Capillary EX-NANO 0.1x250mm InertSustainSwift C18 3 µm	15
5020-88192	Capillary EX-NANO 0.2x 50mm InertSustainSwift C18 3 µm	15
5020-88193	Capillary EX-NANO 0.2x150mm InertSustainSwift C18 3 µm	15
5020-88194	Capillary EX-NANO 0.2x250mm InertSustainSwift C18 3 µm	15
5020-88176	Capillary EX 0.3x 50mm InertSustainSwift C18 3 µm	20
5020-88177	Capillary EX 0.3x150mm InertSustainSwift C18 3 µm	20
5020-88178	Capillary EX 0.5x 50mm InertSustainSwift C18 3 µm	20
5020-88179	Capillary EX 0.5x150mm InertSustainSwift C18 3 µm	20
5020-88180	Capillary EX 0.7x 50mm InertSustainSwift C18 3 µm	20
5020-88181	Capillary EX 0.7x150mm InertSustainSwift C18 3 µm	20
5020-88182	EX Micro Guard (Metal) 0.3x2mm InertSustainSwift C18 3 µm	20
5020-88089	Capillary EX-NANO 0.05x 50mm InertSustainSwift C18 5 µm	15
5020-88090	Capillary EX-NANO 0.05x150mm InertSustainSwift C18 5 µm	15
5020-88091	Capillary EX-NANO 0.05x250mm InertSustainSwift C18 5 µm	15
5020-88092	Capillary EX-NANO 0.075x 50mm InertSustainSwift C18 5 µm	15
5020-88093	Capillary EX-NANO 0.075x150mm InertSustainSwift C18 5 µm	15
5020-88094	Capillary EX-NANO 0.075x250mm InertSustainSwift C18 5 µm	15
5020-88095	Capillary EX-NANO 0.1x 50mm InertSustainSwift C18 5 µm	15
5020-88096	Capillary EX-NANO 0.1x150mm InertSustainSwift C18 5 µm	15
5020-88097	Capillary EX-NANO 0.1x250mm InertSustainSwift C18 5 µm	15
5020-88098	Capillary EX-NANO 0.2x 50mm InertSustainSwift C18 5 µm	15
5020-88099	Capillary EX-NANO 0.2x150mm InertSustainSwift C18 5 µm	15
5020-88100	Capillary EX-NANO 0.2x250mm InertSustainSwift C18 5 µm	15
5020-88081	Capillary EX 0.3x 50mm InertSustainSwift C18 5 µm	20
5020-88082	Capillary EX 0.3x150mm InertSustainSwift C18 5 µm	20
5020-88083	Capillary EX 0.5x 50mm InertSustainSwift C18 5 µm	20
5020-88084	Capillary EX 0.5x150mm InertSustainSwift C18 5 µm	20
5020-88085	Capillary EX 0.7x 50mm InertSustainSwift C18 5 µm	20
5020-88086	Capillary EX 0.7x150mm InertSustainSwift C18 5 µm	20
5020-88087	EX Micro Guard (Metal) 0.3x2mm InertSustainSwift C18 5 µm	20
5020-88088	EX Micro Guard (Non-Metal) 0.3x2mm InertSustainSwift C18 5 µm	20

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

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

Applications

Analysis of β -blocker

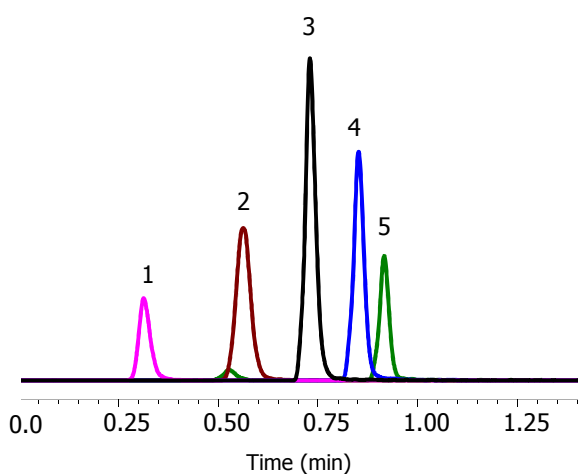
Analyte:

1. Acebutolol	100 $\mu\text{g/L}$
2. Atenolol	100 $\mu\text{g/L}$
3. Labetalol	100 $\mu\text{g/L}$
4. Nadolol	100 $\mu\text{g/L}$
5. Pindolol	100 $\mu\text{g/L}$

Conditions

Column : InertSustainSwift C18
(1.9 μm , 50 x 2.1 mm I.D.)
Column Cat. No. : 5020-88228
Eluent : A) 10 mM HCOONH_4 in CH_3OH
B) 10 mM HCOONH_4 in H_2O

Time (min)	A (vol%)	B (vol%)
0	30	70
0.3	60	40
0.8	100	0
0.9	100	0
0.91	30	70
1.41	30	70



Flow Rate : 0.6 mL/min
Col. Temp. : 40 $^\circ\text{C}$
Detection : LC/MS/MS (ESI, Positive, MRM)
Injection Vol. : 1 μL
Sample : Standard

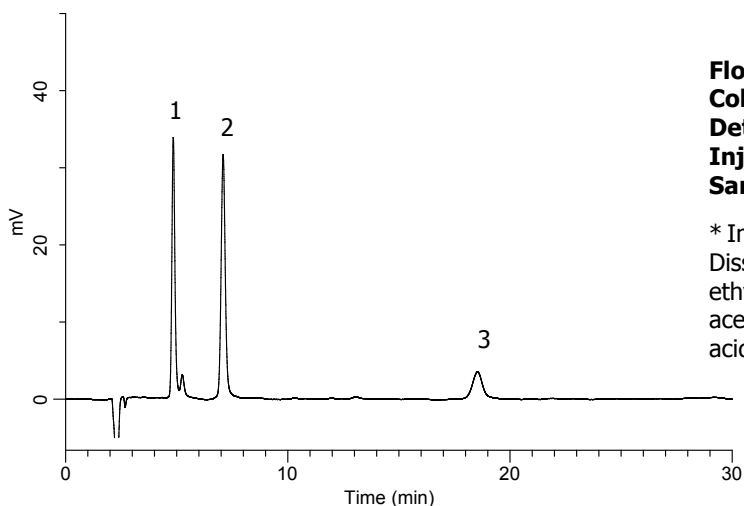
Analysis of Tetracyclines

Analyte:

1. Oxytetracycline	1 mg/L
2. Tetracycline	1 mg/L
3. Chlortetracycline	1 mg/L

Conditions

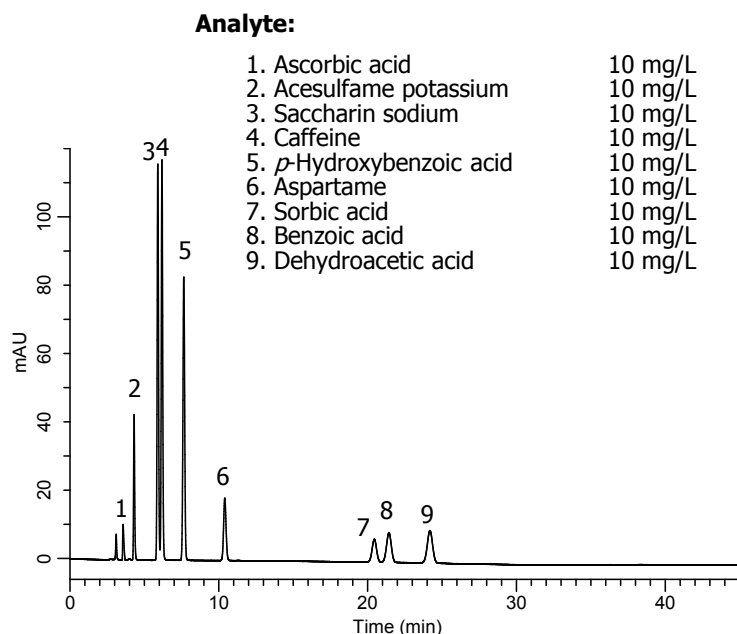
System : GL7700 HPLC system
Column : InertSustainSwift C18
(5 μm , 150 x 4.6 mm I.D.)
Column Cat. No. : 5020-88026
Eluent : A) CH_3OH
B) Imidazole buffer*
A/B = 15/85, v/v
Flow Rate : 0.85 mL/min
Col. Temp. : 40 $^\circ\text{C}$
Detection : FL Ex 380 nm Em 520 nm
Injection Vol. : 20 μL
Sample : Standard



* Imidazole buffer :
Dissolve 68.08 g of imidazole, 0.37 g of disodium ethylenediaminetetraacetate and 10.72 g of magnesium acetate in 800mL of H_2O . Adjust to pH 7.2 with acetic acid and dilute this solution to 1,000 mL with H_2O .

Applications

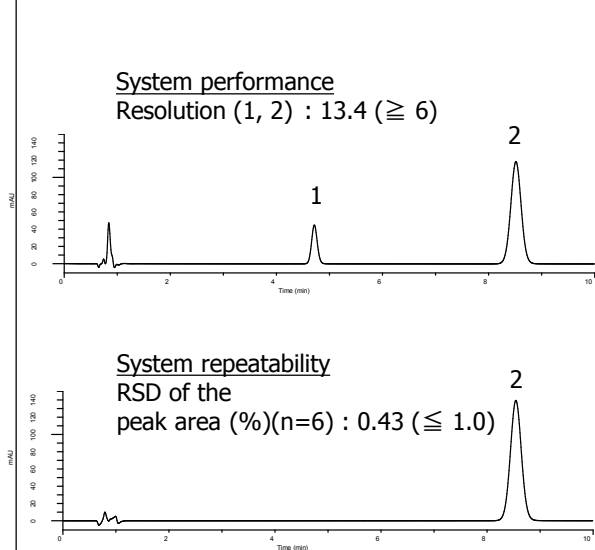
Analysis of Preservatives and Sweetener



Conditions

System : GL-7400 HPLC system
Column : InertSustainSwift C18
 (5 μ m, 250 x 4.6 mm I.D.)
Column Cat. No. : 5020-88027
Eluent : A) CH₃CN
 B) 0.1% H₃PO₄ in H₂O
 A/B = 15/85, v/v
Flow Rate : 1.0 mL/min
Col. Temp. : 40 °C
Detection : UV 210 nm (GL-7452 PDA Detector)
Injection Vol. : 10 μ L
Sample : Standard

Analysis of Terbinafine Hydrochloride (Under the Condition of the Japanese Pharmacopoeia, Terbinafine hydrochloride Cream)



Conditions

System : GL-7400 HPLC system
Column : InertSustainSwift C18
 (5 μ m, 125 x 4.0 mm I.D.)
Column Cat. No. : 5020-88251
Eluent : A) CH₃CN
 B) 0.45% Tetramethylammonium hydroxide in H₂O
 (pH8.0, 4% H₃PO₄ in H₂O)
 C) THF
 A/B/C = 2/2/1, v/v/v
Flow Rate : 1.46 mL/min
Col. Temp. : 25 °C
Detection : UV 282 nm (GL-7452 PDA Detector)
Injection Vol. : 10 μ L
Sample : Standard

Analyte:

1. <i>p</i> -Terphenyl	17.5 mg/L
2. Terbinafine hydrochloride	200 mg/L

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