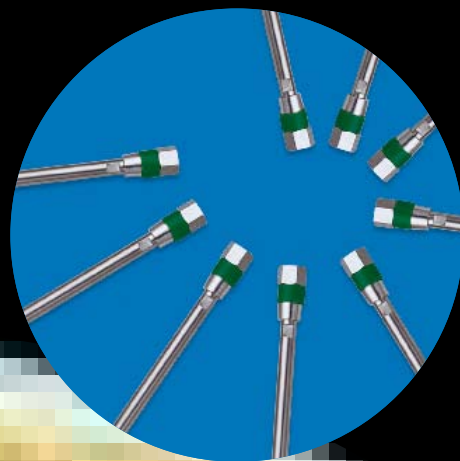


# GraceSmart™ HPLC Columns

- High Purity Phases
- Efficient and Reproducible Separations
- General Use Selectivity
- Exceptional Value

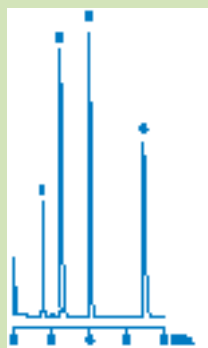


# Smart Quality

## High Quality HPLC Phases

GraceSmart™ HPLC phases use high purity silica and are monomerically bonded with uniform coverage. This translates into symmetrical peaks for acids/bases, and predictable reversed phase selectivity. Whether routine analysis or new method development, use GraceSmart™ columns to get premium performance at exceptional value.

### Acids, Bases and Neutrals



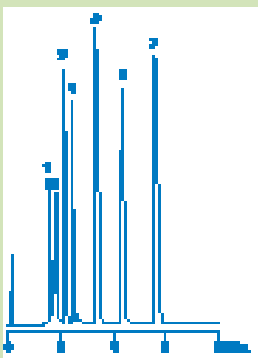
1. Uracil
2. Amitriptyline
3. Phenylvaleric Acid
4. Toluene

**Column:** GraceSmart™ RP18, 5µm, 4.6 x 150mm  
**Mobile Phase:** 50% MeCN/50% 50mM KH<sub>2</sub>PO<sub>4</sub> pH 3 at 35°C

Get symmetrical peaks shapes for strong acids and bases

### Standards Mix

CHROM 10696



- Nicotine
- Quinine
- Diphenhydramine
- Nortriptyline
- 2,4, Dichlorophenoxy Acetic Acid
- 2,4, Dichlorophenoxy Propionic Acid
- 2,4, Dichlorophenoxy Butyric Acid

**Column:** GraceSmart™ RP18, 5µm, 4.6 x 150mm  
**Mobile Phase:** 50% MeCN/50% 50mM KH<sub>2</sub>PO<sub>4</sub> pH 3 at 35°C

Baseline resolve challenging separations

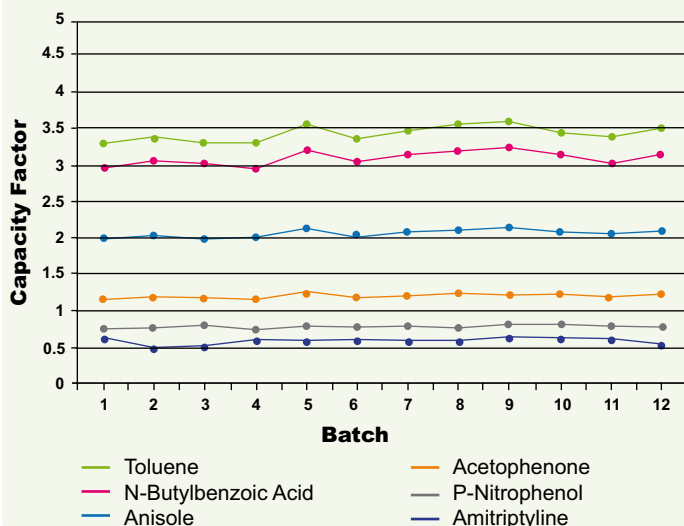
## GraceSmart™ Column Specifications

<b>Phase</b>	C18
<b>Encapping</b>	TMS, nonpolar
<b>Typical Efficiency</b>	>85,000 plates/m
<b>Surface Area</b>	220m <sup>2</sup> /g
<b>Pore Size</b>	120Å
<b>Particle Size</b>	5µm

## Reproducible Methods Start with Reproducible Columns

Our tightly controlled silica synthesis and bonding keep capacity factor and selectivity variations to a minimum. The advanced packing methods deliver consistently high column-to-column efficiency. Every column is individually tested and shipped with a quality assurance chromatogram.

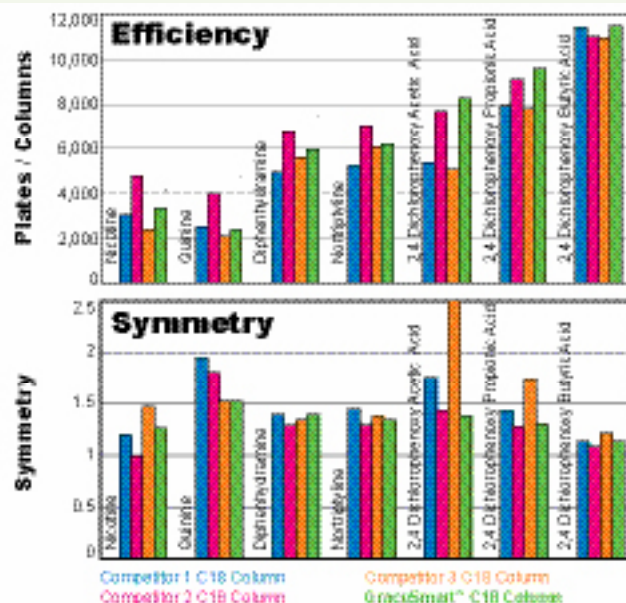
### Highly Reproducible



Consistent batch-to-batch capacity for acidic, basic & neutral compounds

## Expect Competitive Performance

Six sigma techniques and lean manufacturing are key to our cost competitive position, without compromising quality or performance. GraceSmart™ columns show similar or better efficiency and asymmetries for challenging base and acid components in comparison to industry leading columns.

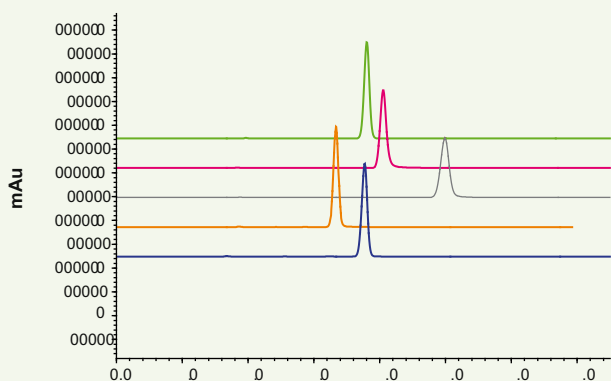


GraceSmart™ columns compare favorably to leading competitor columns

# GraceSmart™ Columns

## Amoxicillin (U.S.P.)

CHROM  
10697



- GraceSmart™ C18 Column
- Luna C18 Column
- Inertsil ODS-3 Column
- Hypersil BDS C18 Column
- Kromasil 100-5 C18 Column

**Column:** GraceSmart™ C18 Column, 5µm, 4.6 x 250mm  
(Part No. 5138810)

**Mobile Phase:** Isocratic, 0.05N Monobasic Potassium Phosphate pH5:  
Acetonitrile (96:4)

**Flow Rate:** 1.5mL/min

**Detector:** UV, 230nm

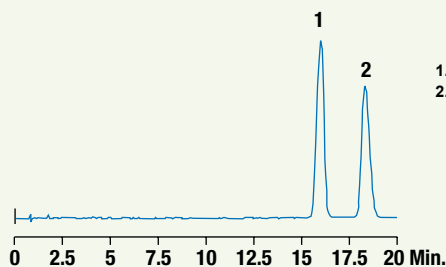
**Column Temp:** 30°C

**Injection Vol:** 10µL

	USP Spec	GraceSmart™ C18	Luna C18	Inertsil ODS-3	Hypersil BDS C18	Kromasil 100-5 C18
Ret. Time (min)	N/A	3.800	4.050	4.988	3.333	3.768
Theoretical plates	≥1700	8543	7216	6230	7049	7680
Tailing Factor	≤2.5	1.015	1.180	1.041	1.034	0.979
k'	1.1≤k'≤2.8	1.2	1.6	2.3	0.99	1.6

## Ibuprofen (U.S.P.)

CHROM  
10702



1. Valerophenone
2. Ibuprofen

**Column:** GraceSmart™ C18 Column, 5µm, 4.6 x 150mm  
(Part No. 5138812)

**Mobile Phase:** H<sub>2</sub>O (adjusted with Phosphoric Acid to a pH of 2.5) :  
Acetonitrile (65:35)

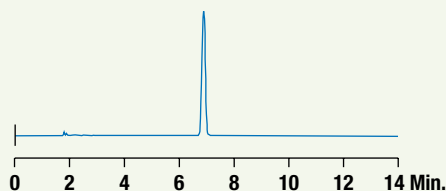
**Flow Rate:** 2mL/min

**Detector:** UV, 214nm

**Injection Vol:** 5µL

## Simvastatin Tablets (U.S.P.)

CHROM  
10708



**Column:** GraceSmart™ C18 Column, 5µm, 4.6 x 250mm  
(Part No. 5138810)

**Mobile Phase:** 0.39% Monobasic Sodium Phosphate pH4.5: Acetonitrile (35:65)

**Flow Rate:** 1.5mL/min

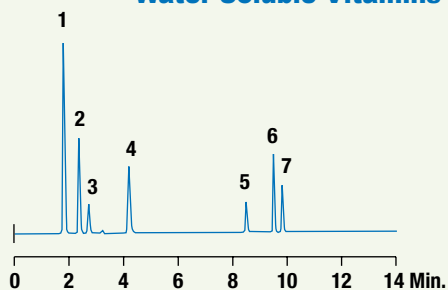
**Detector:** UV, 238nm

**Column Temp:** 45°C

**Injection Vol:** 10µL

## Water Soluble Vitamins

CHROM  
10733



1. Ascorbic Acid
2. Nicotinic Acid
3. Pyridoxamine
4. Niacinamide
5. Folic Acid
6. Vitamin B12
7. Riboflavin

**Column:** GraceSmart™ C18 Column, 5µm, 4.6 x 150mm  
(Part No. 5138812)

**Mobile Phase:** A: 0.1M NH<sub>4</sub>H<sub>2</sub>PO<sub>4</sub> Buffer, pH4.5  
B: Acetonitrile

**Gradient:** (Time, %B): (0,5), (4,5), (10,40), (15,40)

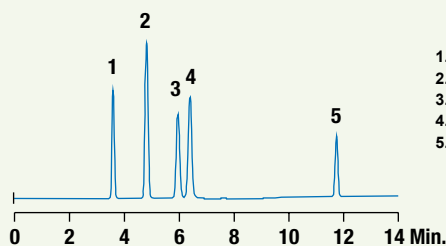
**Flow Rate:** 1.0mL/min

**Detector:** UV, 254nm

**Injection Vol:** 2µL

## Phenols

CHROM  
10707



1. Phenol
2. 4-Nitrophenol
3. 2-Chlorophenol
4. 2-Nitrophenol
5. 2,4-Dichlorophenol

**Column:** GraceSmart™ C18 Column, 5µm, 4.6 x 150mm  
(Part No. 5138810)

**Mobile Phase:** A: 1% Glacial Acetic Acid in Water  
B: 1% Glacial Acetic Acid in Methanol

**Gradient:** (Time, %B): (0,45), (6,45) (8,60), (15,80)

**Flow Rate:** 1.0mL/min

**Detector:** UV, 280nm

**Injection Vol:** 10µL

# Smart Value

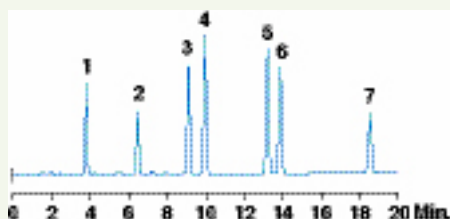
Grace Davison Discovery Sciences sets a new standard in HPLC columns. From the silica particle to the finished product, our streamlined manufacturing delivers smart quality and smart performance, at an exceptional value!

GraceSmart™ RP18 Columns			
Part No.	i.d. x Length	Particle Size	Price
5138812	4.6 x 150mm	5µm	
5138810	4.6 x 250mm	5µm	
5138811	2.1 x 150mm	5µm	
5138813	2.1 x 250mm	5µm	



## Carbamates

CHROM  
10739

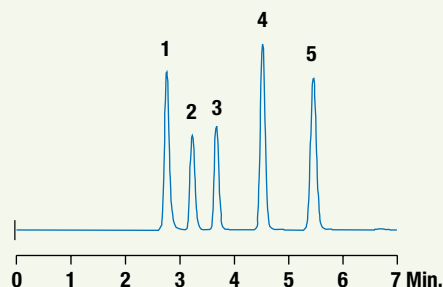


1. Fenuron
2. Monuron
3. Fluometuron
4. Diuron
5. Methiocarb
6. Linuron
7. Neburon

**Column:** GraceSmart™ C18 Column, 5µm, 4.6 x 150mm (Part No 5138812)  
**Mobile Phase:** A: 0.025M KH<sub>2</sub>PO<sub>4</sub>, pH3.2 B: Acetonitrile  
**Gradient:** (Time, %B): (0,30), (20,60)  
**Flow Rate:** 1.0mL/min  
**Detector:** UV, 240nm  
**Injection Vol:** 10µL

## Organic Acids

CHROM  
10705



1. Tartaric Acid
2. Malic Acid
3. Lactic Acid
4. Maleic Acid
5. Fumaric Acid

**Column:** GraceSmart™ C18 Column, 5µm, 4.6 x 150mm (Part No 5138810)  
**Mobile Phase:** 0.025M KH<sub>2</sub>PO<sub>4</sub>(pH2.5) : Methanol (97:3)  
**Flow Rate:** 0.7mL/min  
**Detector:** UV, 220nm  
**Injection Vol:** 1µL

The information presented herein is derived from our testing and experience and in the case of the Amoxicillin (U.S.P.) test results presented above, was derived using a standard analytical HPLC system with a system volume of 2.54 ml. It is offered, free of charge, for your consideration, investigation and verification. Since operating conditions vary significantly, and since they are not under our control, we disclaim any and all warranties on the results which might be obtained from the use of our products. You should make no assumption that all safety or environmental protection measures are indicated or that other measures may not be required. This product(s) may be covered by patents or patents pending. Grace reserves the right to change prices and/or specifications without prior notification. Printed in the USA.

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