

SecurityGuard™ UHPLC / HPLC / PREP Column Protection

 **phenomenex**®
...breaking with tradition™



Less frequent UHPLC / HPLC / PREP column replacement

Save Time and Money

It's a fact! Chemical contaminants and particulates are a natural part of any chromatographic analysis.

The easiest way to extend column performance is to remove these contaminants and particulates with the SecurityGuard™ Cartridge System before they reach your column and degrade your chromatography.

SecurityGuard:

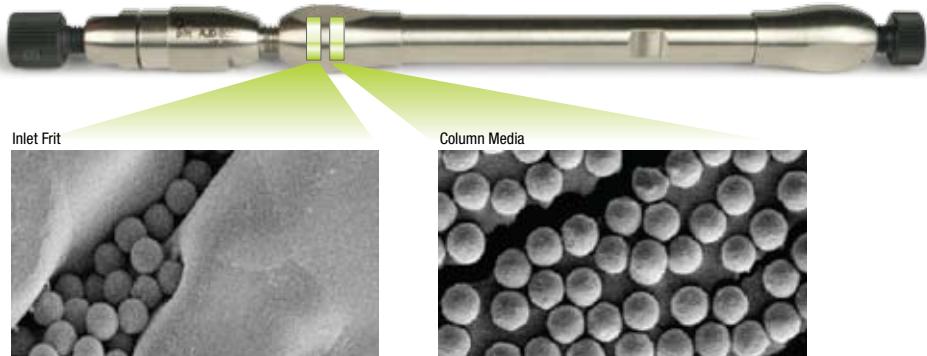
- Protects and extends UHPLC, HPLC and PREP column lifetime
- Virtually no change in chromatography
- Simple to use



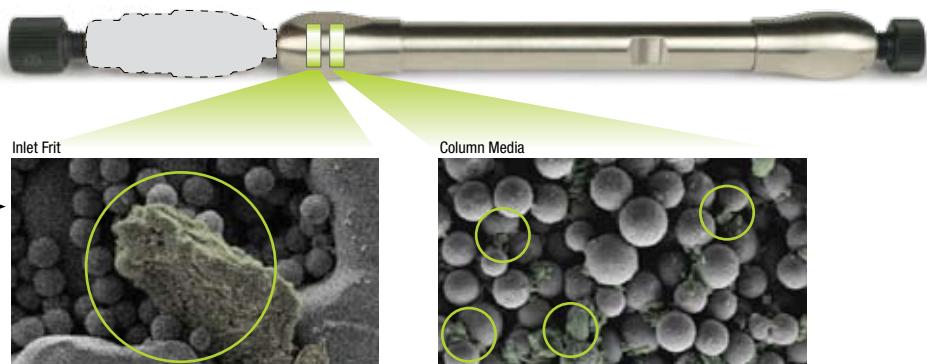
Scanning electron microscopy of column inlet frit

(24000 times magnification)

With SecurityGuard



Without SecurityGuard



UHPLC / HPLC / PREP

Choose Your Column Protection

No matter which type of column you're using, SecurityGuard™ offers the column protection you need



UHPLC

SecurityGuard ULTRA

4-9

All core-shell and/or < 3 µm particle columns (< 20,000 psi / 1,378 bar)



HPLC

SecurityGuard

10-15

All non core-shell and ≥ 3 µm particle columns (< 3,500 psi / 241 bar)



PREP

SecurityGuard PREP

16-18

For Prep HPLC columns with 9.0 to 49.0 mm internal diameter (ID)

Removes harmful contaminants and particulates
Longer Column Lifetime

**UHPLC Column Protection:**

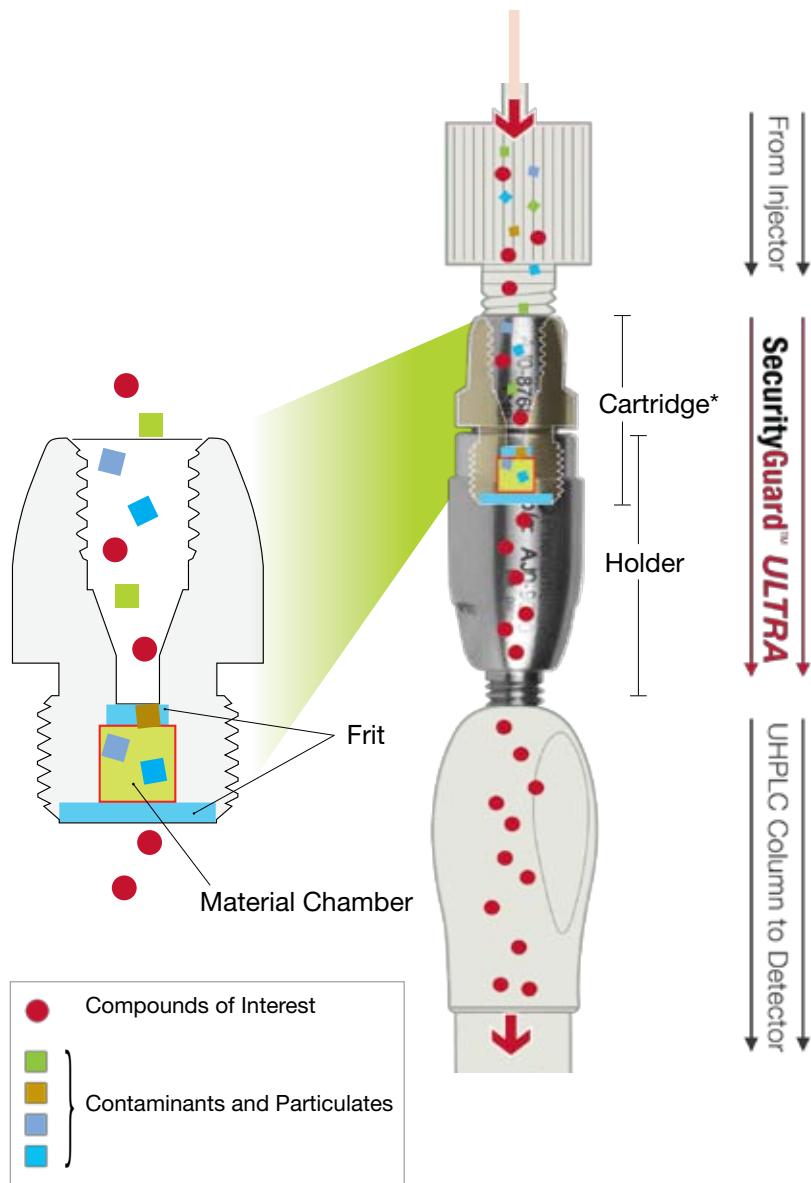
- Extends HPLC, core-shell, and sub-2 µm column lifetime
- Fits virtually all manufacturers' columns 2.1 to 4.6 mm ID
- Pressure rated to 20,000 psi (1,378 bar)
- Simple to use

The SecurityGuard ULTRA cartridge traps contaminants and particulates. Once the cartridge is exhausted, simply replace it instead of your expensive column investment.

The universal holder provides a leak-free connection to virtually any UHPLC column.

You will experience:

- Increased column lifetime
- Higher column performance
- More reproducible chromatography
- Fewer wasted columns



Specifically for UHPLC columns and methods

Easy to Use, Innovative Design



The SecurityGuard ULTRA column protection system is designed to extend the lifetime of sub-2 µm and core-shell columns, while maintaining the ultra-high performance results they generate.

① Auto-adjusting Tip

provides a leak-free connection to virtually any UHPLC column

② Re-usable Holder

minimizes costs and waste

③ Disposable Cartridge

for quick and easy removal and replacement

④ Packed with Media

for maximum column protection

⑤ Conveniently Labeled

to ensure guard-to-column phase compatibility



Keeps UHPLC columns performing at their best One Easy Step

When contaminates and particulates build up at the head of the column or on the guard cartridges, system pressures dramatically increase.

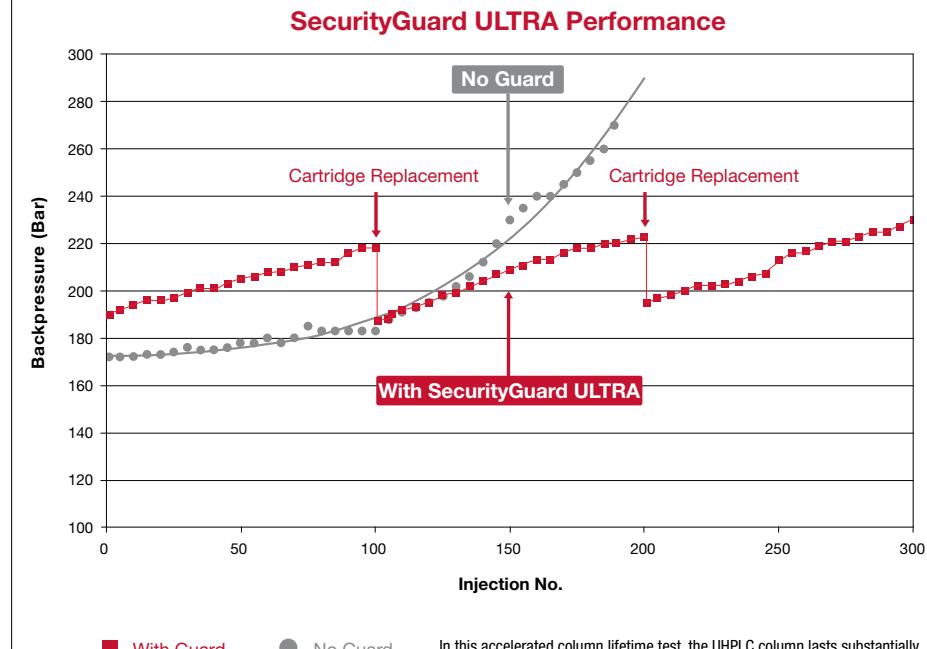
By simply replacing the SecurityGuard ULTRA cartridge instead of your sub-2 µm or core-shell UHPLC column you are able to regain normal operating conditions and reclaim original column performance.



Watch how easy it is to replace
your cartridge



Accelerated lifetime test using endogenous biological matrix on Kinetex® 2.6 µm C18 50 x 4.6 mm ID



Universal connector

Protect Any UHPLC Column



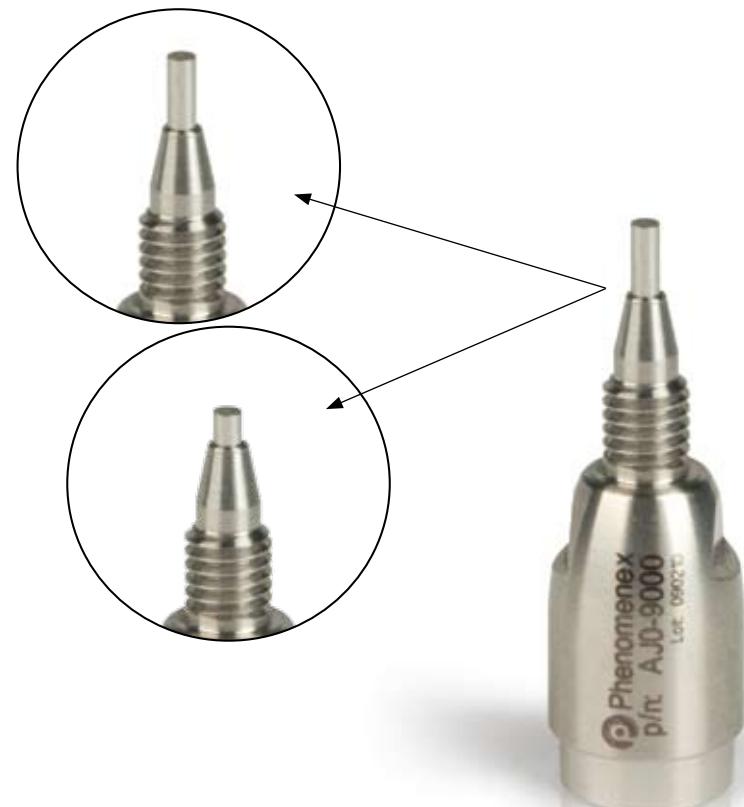
Installing the SecurityGuard ULTRA protection system into your favorite UHPLC column is straightforward and easy.

The floating outlet from the SecurityGuard ULTRA universal holder automatically adjusts to the precise depth of virtually every manufacturer's analytical UHPLC column. This ensures a low dead-volume, leak-free connection, without the use of unions or adapters, no matter which manufacturer's UHPLC column you are using.



Compatible UHPLC Fittings

Tip adjusts to fit any UHPLC column



Virtually no change in chromatography Maintain UHPLC Performance!

SecurityGuard ULTRA maintains UHPLC column performance without altering your chromatographic results. The extremely low dead-volume (<0.3 µL) of this unique guard design minimizes sample peak dispersion ensuring that ultra-high efficiency chromatography is maintained.

No Guard	SecurityGuard ULTRA	Competitor
Efficiency (p/m)	11,795	11,390
Symmetry	0.92	0.86
Selectivity	1.47	1.46
Backpressure (bar)	354	384

Values based on naphthalene peak.

Conditions same for all applications:

Column: Kinetex® 1.7 µm XB-C18

Dimensions: 50 x 2.1 mm

Mobile Phase: Acetonitrile / Water (50:50)

Injection Volume: 1 µL

Flow Rate: 1 mL/min

Temperature: 22 °C

Detection: UV @ 270 nm

Sample: 1. Acetophenone

2. Benzene

3. Toluene

4. Naphthalene

Unlike competitors' UHPLC guard systems

SecurityGuard ULTRA has virtually no effect on efficiency, retention time, or backpressure. This leads to longer column lifetime with no loss in column performance.

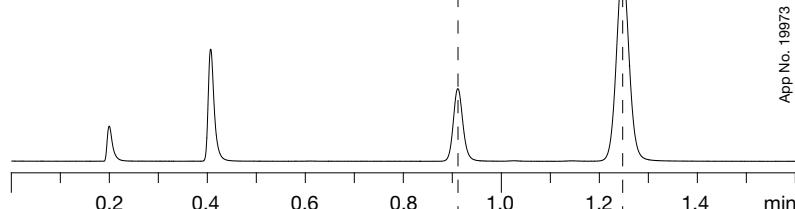


2012 R&D 100
Award Recipient

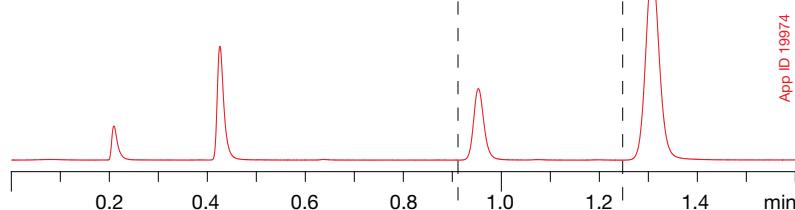


SecurityGuard ULTRA outperforms the competition

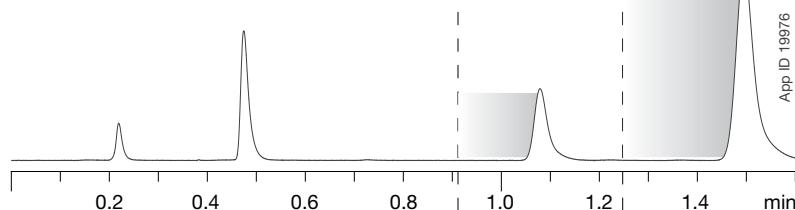
No Guard



SecurityGuard ULTRA



Competitor



Comparative separations may not be representative of all applications.

SecurityGuard ULTRA Ordering Information



SecurityGuard ULTRA Cartridges



Material	Description	pH Stability	Column ID (mm)		
			2.1	3.0	4.6
Cartridges for General Purpose/ Pharmaceutical					
			/3pk	/3pk	/3pk
C18	(ODS, Octadecyl)	1.5 – 8.5*	AJ0-8782	AJ0-8775	AJ0-8768
C8	(MOS, Octyl)	1.5 – 8.5*	AJ0-8784	AJ0-8777	AJ0-8770
PFP	(Pentafluorophenyl)	1.5 – 8.5*	AJ0-8787	AJ0-8780	AJ0-8773
HILIC	HILIC	2.0 – 7.5	AJ0-8786	AJ0-8779	AJ0-8772
Phenyl	(Phenylhexyl)	1.5 – 8.5*	AJ0-8788	AJ0-8781	AJ0-8774
Cartridges for Protein and Peptide Reversed Phase					
Widepore C18	(ODS, Octadecyl)	1.5 – 8.5*	AJ0-8783	–	AJ0-8769
Widepore C8	(MOS, Octyl)	1.5 – 8.5*	AJ0-8785	–	AJ0-8771
Widepore C4	(Butyl)	1.5 – 8.5*	AJ0-8899	–	AJ0-8901
Peptide C18	(ODS, Octadecyl)	1.5 – 8.5*	AJ0-8948	–	AJ0-8946

*pH stable 1.5 – 8.5 under gradient conditions. pH stable 1.5 – 10 under isocratic conditions.

SecurityGuard ULTRA Holder



Part No.	Description	Unit	Price
AJ0-9000	SecurityGuard ULTRA Cartridge Holder	ea	

AJ0-9000 is the universal holder designed for use with 2.1 mm, 3.0 mm and 4.6 mm ID cartridges.

Designed for all core-shell and/or < 3 µm particle columns (< 20,000 psi / 1,378 bar)



guarantee

If SecurityGuard ULTRA cartridge protection system does not perform as well or better than your current guard cartridge system of similar phase and dimensions, return the product with comparative data within 45 days for a FULL REFUND.



See it in action:
www.phenomenex.com/SecurityGuardULTRA



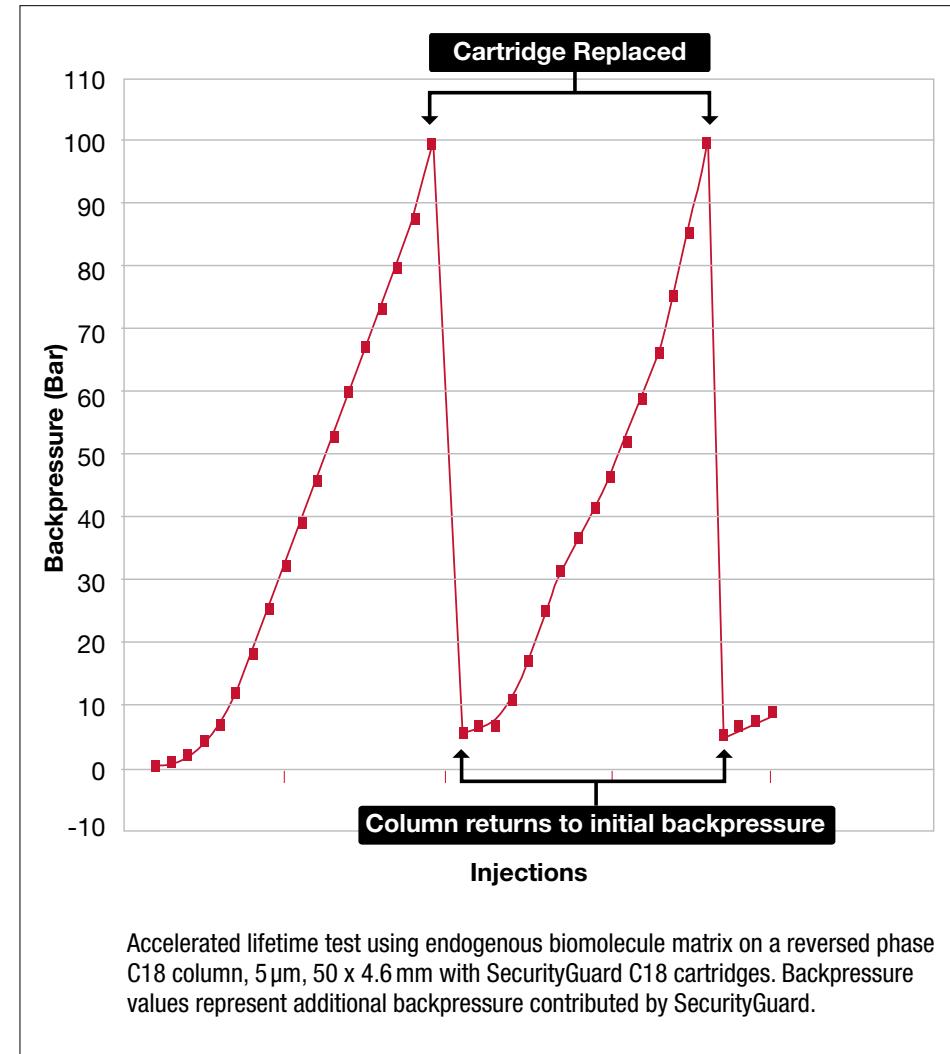
HPLC column protection SecurityGuard



- Extends HPLC column lifetime
- Won't alter chromatography
- Compatible with virtually all HPLC columns
- Easy to determine when to change cartridge
- Easy to use

Increases HPLC Column Lifetime, Guaranteed!

Simply replace SecurityGuard cartridges instead of your expensive HPLC columns. In this graph, once the expired SecurityGuard cartridge was replaced, the pressure immediately dropped and the column performance was restored allowing for extended column use.



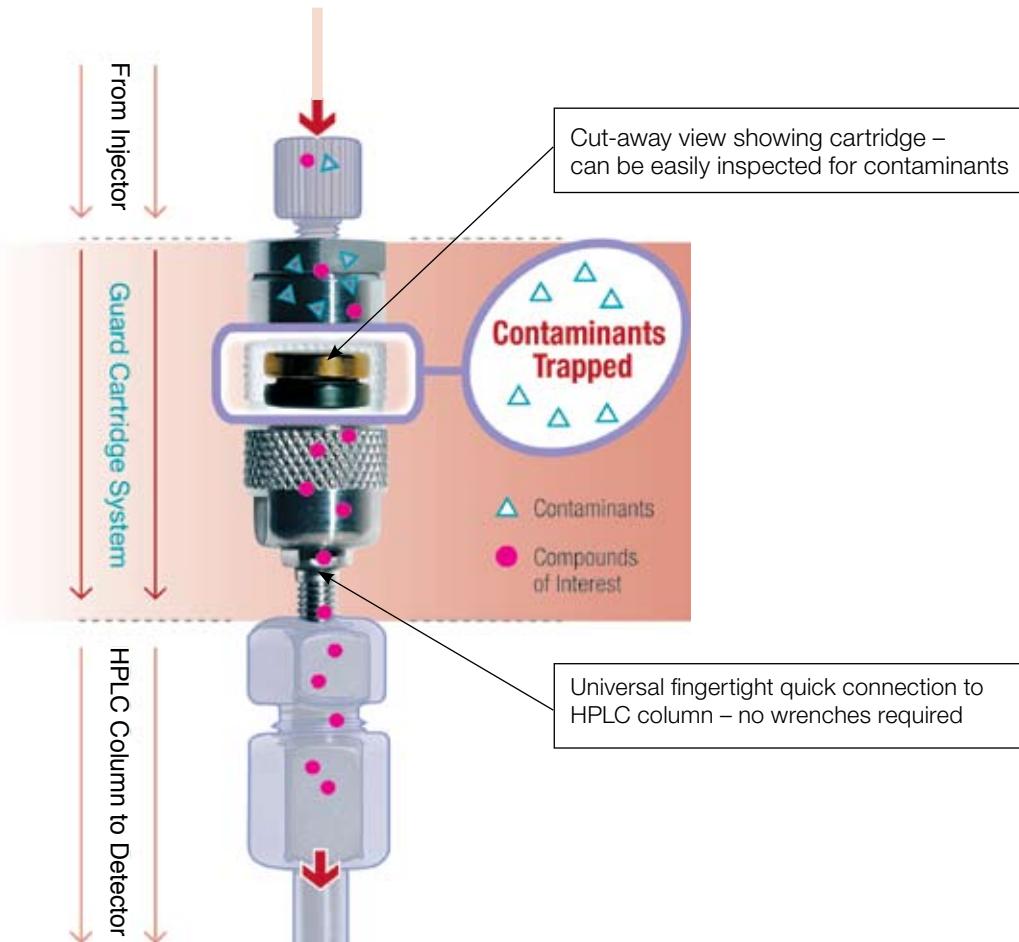
Protect your columns from contaminants

How Does It Work?



The SecurityGuard analytical cartridge holder (patented) directly fingertightens into virtually any manufacturer's column with a female/inverted endfitting. Contaminants are retained by an inexpensive disposable cartridge instead of damaging your valuable HPLC column investment.

"We used to have to change out our columns every 2 to 3 months and ever since we started using the SecurityGuard cartridges we can do at least 6 months before changing a column out." T. Serviss



SecurityGuard

Will It Work With My HPLC Column?



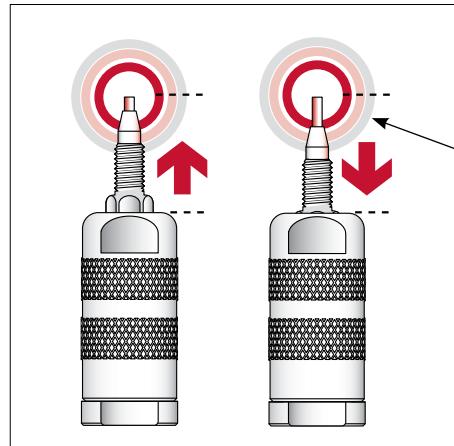
SecurityGuard is a universal direct-connect holder.

The floating outlet of the analytical SecurityGuard holder fits virtually ANY manufacturer's column endfitting, making it a truly universal guard system.



See it in action:

www.phenomenex.com/SecurityGuardInstallation



The floating outlet automatically adjusts to the precise port depth of virtually any analytical HPLC column. This ensures a low-dead volume, leak-free connection, without the use of unions or adapters.

Fits virtually all your HPLC columns!

Gemini®-NX
Jupiter®
Luna®
SphereClone™
BioSep™
HYPERSIL®
Spherisorb®
Inertsil®
Lux®
LiChrospher®

LiChrosorb®
Prodigy™
Gemini®
Vydac®
ZORBAX®
SunFire™
Ultrasphere®
Bondclone™
XBridge™
Capcell Pak®

Symmetry®
Rezex™
Nucleosil®
Synergi™
Partisil®
XTerra®
Develosil®
Partisphere®
Bio-Si®
CHIRALCEL® OD-H®

PolymerX™
SynChropak®
Sugar-Pak™
Aminex®
Kromasil®
and many more...



SecurityGuard

Will It Alter My Chromatography?



SecurityGuard will protect your valuable HPLC columns, without altering your chromatographic results. The short 4 mm analytical cartridges have virtually no effect on efficiency, retention time, or backpressure.



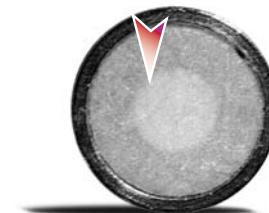
"We didn't see any change in peaks. SecurityGuard has increased the life of the column." B. Dietz

When Do I Replace My Cartridges?

The “see your dirt” feature lets you know exactly when it’s time to replace your cartridge.

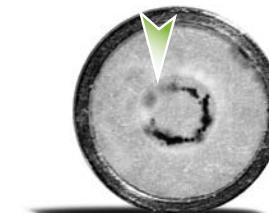
Visually inspect the surface of the cartridge’s packing material any time, without disturbing the packing bed. Now you can easily monitor visual contaminant build-up, and change your guard cartridge before it’s too late!

If your contaminants are colorless, replace the cartridge as often as needed to maintain chromatographic performance.



Clean

If it looks clean, the cartridge may be reinserted for further use.



Dirty

If either discoloration or particle build-up is observed, it’s time to replace the cartridge.

“When replacing a cartridge it is visibly obvious that the extraneous material is captured by the cartridge and prevents contamination of the analytical column...” F. Shakir

SecurityGuard Ordering Information



Material	Description	pH Stability	USE CARTRIDGES (mm):
Cartridges for General Purpose/Pharmaceutical			
C18	(ODS, Octadecyl)	1.5 - 10	AJ0-4286 / 10 pk
C12	(Dodecyl)	1.5 - 10	AJ0-6073 / 10 pk
C8	(MOS, Octyl)	1.5 - 10	AJ0-4289 / 10 pk
C5	(Pentyl)	1.5 - 10	AJ0-4292 / 10 pk
C1	(TMS)	2 - 9	AJ0-4298 / 10 pk
Silica	—	—	AJ0-4347 / 10 pk
HILIC	HILIC	1.5 - 8	AJ0-8328 / 10 pk
NH ₂	(Amino, Aminopropyl)	1.5 - 11	AJ0-4301 / 10 pk
CN	(Cyano, Cyanopropyl)	2 - 7.5	AJ0-4304 / 10 pk
Phenyl	(Phenylhexyl)	1.5 - 10	AJ0-4350 / 10 pk
PFP(2)	(Pentafluorophenylpropyl)	1.5 - 8	AJ0-8326 / 10 pk
SCX	(SA, Strong Cation Exchanger)	2.5 - 7.5	AJ0-4307 / 10 pk
SAX	(SB, Strong Anion Exchanger)	2.5 - 7.5	AJ0-4310 / 10 pk
RP-1	(Reversed Phase - Polymer)	0 - 14	AJ0-5808 / 10 pk
Polar-RP	(Ether-linked Phenyl)	1.5 - 7	AJ0-6075 / 10 pk
Fusion-RP	(C18 Polar Embedded)	1.5 - 10	AJ0-7556 / 10 pk
AQ C18	(Polar Endcapped C18)	1.5 - 7.5	AJ0-7510 / 10 pk
Gemini® NX	(C18 TWIN-NX™ Technology)	1 - 12	AJ0-8367 / 10 pk
Gemini® C18	(C18 TWIN™ Technology)	1 - 12	AJ0-7596 / 10 pk
Gemini® C6-Phenyl	(C6-Phenyl TWIN™ Technology)	1 - 12	AJ0-7914 / 10 pk
Oligo-RP™	(C18 TWIN™ Technology)	1 - 12	AJ0-8134 / 10 pk
Oligo-WAX™	(WA, Weak Anion Exchanger)	1.5 - 11	— AJ0-8324 / 10 pk
Guard Cartridge Holders			
(reusable holders)			
			

Designed for fully porous HPLC columns and not intended for use with Kinetex, Aeris or other sub-2 µm or core-shell columns. Pressure rated to 3500 psi (241 bar).

Material	Description	pH Stability	USE CARTRIDGES (mm):
Cartridges for Protein and Polypeptide Reversed Phase			
Widepore C18	(ODS, Octadecyl)	1.5 - 10	AJ0-4320 / 10 pk
Widepore C5	(Pentyl)	1.5 - 10	AJ0-4326 / 10 pk
Widepore C4	(Butyl)	1.5 - 10	AJ0-4329 / 10 pk
Cartridges for Silica GFC			
(Aqueous SEC) For use with silica GFC columns, such as BioSep® and Yarra™ (Phenomenex); ZORBAX® GF-Series (Agilent Technologies); Bio-Sil® (Bio-Rad).			
GFC-2000	—	2 - 7.5	— AJ0-4487 / 10 pk
GFC-3000	—	2 - 7.5	— AJ0-4488 / 10 pk
GFC-4000	—	2 - 7.5	— AJ0-4489 / 10 pk
Cartridges for Chiral			
For use with chiral columns, such as Lux® Cellulose-1, -2, -3, -4 & Amylose-2 (Phenomenex); CHIRALCEL® OD-H® & CHIRALCEL® OJ-H®; & CHIRALPAK® AD-H (DAICEL Chemical Industries Ltd.)			
Lux® Cellulose-1	Cellulose tris(3,5-dimethylphenylcarbamate)	2 - 9	AJ0-8402 / 10 pk
Lux® Cellulose-2	Cellulose tris(3-chloro-4-methylphenylcarbamate)	2 - 9	AJ0-8398 / 10 pk
Lux® Cellulose-3	Cellulose tris(4-methylbenzoate)	2 - 9	AJ0-8621 / 10 pk
Lux® Cellulose-4	Cellulose tris(4-chloro-3-methylphenylcarbamate)	2 - 9	AJ0-8626 / 10 pk
Lux® Amylose-2	Amylose tris(5-chloro-2-methylphenylcarbamate)	2 - 9	AJ0-8471 / 10 pk
Cartridges for Carbohydrate/Organic Acid			
For organic acid and carbohydrate analysis, such as Rezex™ (Phenomenex); Aminex® (Bio-Rad); Sugar-Pak™ (Waters).			
Carbo-H*	—	1 - 8	— AJ0-4490 / 10 pk
Carbo-Ag*	—	Neutral	— AJ0-4491 / 10 pk
Carbo-Pb ²⁺	—	Neutral	— AJ0-4492 / 10 pk
Carbo-Ca ²⁺	—	Neutral	— AJ0-4493 / 10 pk

* For use with saccharide and oligosaccharide columns in Ag⁺ form.

Material	Description	pH Stability	USE CARTRIDGES (mm):
Guard Cartridge Holders			
(reusable holders)			
			

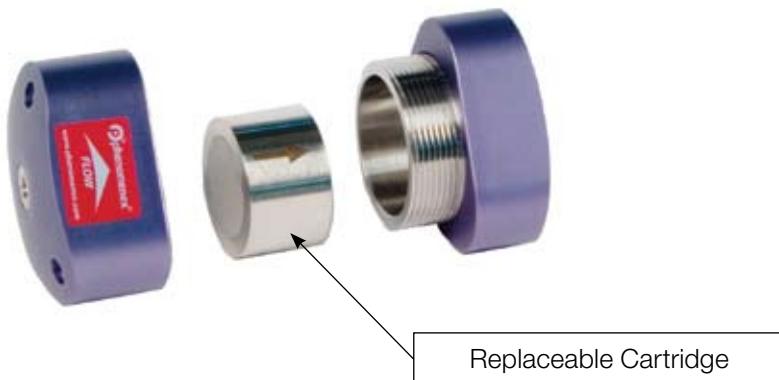
guarantee

If the SecurityGuard Cartridge System does not provide at least an equivalent performance as compared to a competing guard cartridge system, return the product with the comparative data within 45 days for a FULL REFUND.

PREP HPLC Column Protection

- Extends prep column lifetime by as much as 5 times
- Protects column from samples that precipitate out of solution
- Protects column from contaminants
- Stable and leak-free up to 60 mL/min within specified pressure ratings

The SecurityGuard PREP system was designed to effectively and inexpensively protect your valuable prep columns from the damaging effects of mobile phase and sample chemical contaminants and particulates, without altering your chromatographic results.



Lowering Your Cost Per Injection!

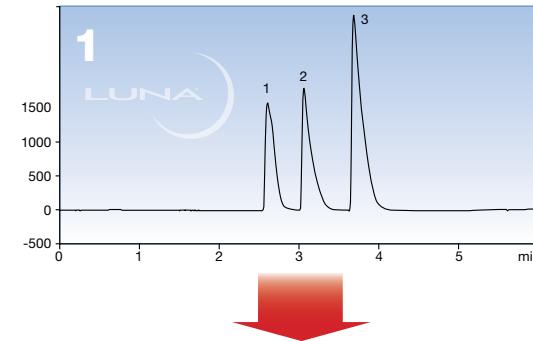
SecurityGuard isn't only about column protection, it's about lowering your cost per injection!

When you increase the number of injections from a single preparative column you're lowering your overall cost per injection.

With SecurityGuard PREP, the inexpensive cartridge was ruined while the integrity of the prep column was maintained and its performance restored.

Forced Degradation Study

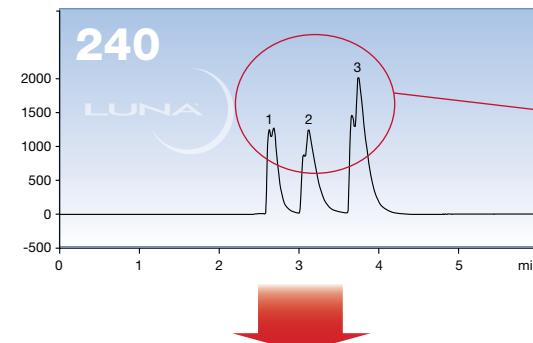
Injection 1: Axia™ Packed column with SecurityGuard PREP cartridge



Conditions

Column: Luna® 10 µm C18(2) Axia Packed
 Dimension: 50 x 21.2 mm
 Part No.: 00B-4253-P0-AX
 Mobile Phase: A: 0.1% TFA in Water
 B: 0.1% TFA in Water / Acetonitrile (25:75)
 Gradient: Linear 93:7 (A/B) to 100 % B over 5 minutes
 Injection Volume: 420 µL
 Flow Rate: 60 mL/min
 Temperature: Ambient
 Detection: UV @ 270 nm
 Sample: 1. Nadolol
 2. Metoprolol
 3. Propranolol

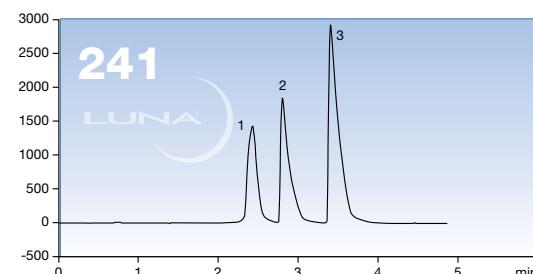
Injection 240: Axia Packed column with SecurityGuard PREP cartridge



Time to change
the PREP cartridge



Injection 241: Axia Packed column after removing SecurityGuard column protection system



Original column
performance maintained by
using SecurityGuard PREP

SecurityGuard PREP Ordering Information



PREP

SecurityGuard PREP

18

Material	Description	pH Stability	SEMI-PREP IF YOUR HPLC COLUMN ID (mm) IS: 9.0-16.0	PREP 18.0-29.0	PREP 30.0-49.0
Cartridges for General Purpose/Pharmaceutical			/3 pk	/ea	/ea
C18	(ODS, Octadecyl)	1.5 - 10	AJ0-7221	AJ0-7839	AJ0-8301
C12	(Dodecyl)	1.5 - 10	AJ0-7275	AJ0-7842	AJ0-8304
C8	(MOS, Octyl)	1.5 - 10	AJ0-7222	AJ0-7840	AJ0-8302
C5	(Pentyl)	1.5 - 10	AJ0-7372	—	—
C1	(TMS)	2 - 9	AJ0-7373	—	—
Silica	—	—	AJ0-7223	AJ0-7229	AJ0-8312
HILIC	HILIC	1.5 - 8	AJ0-8902	—	—
NH ₂	(Amino, Aminopropyl)	1.5 - 11	AJ0-7364	AJ0-8162	AJ0-8309
CN	(Cyano, Cyanopropyl)	2 - 7.5	AJ0-7313	AJ0-8220	AJ0-8311
Phenyl	(Phenylhexyl)	1.5 - 10	AJ0-7314	AJ0-7841	AJ0-8303
PFP(2)	(Pentafluorophenylpropyl)	1.5 - 8	AJ0-8376	AJ0-8377	AJ0-8378
SCX	(SA, Strong Cation Exchanger)	2.5 - 7.5	AJ0-7369	AJ0-8595	AJ0-8596
SAX	(SB, Strong Anion Exchanger)	2.5 - 7.5	AJ0-7370	—	—
RP-1	(Reversed Phase - Polymer)	0 - 14	AJ0-7368	AJ0-8358	—
Polar-RP	(Ether-linked Phenyl)	1.5 - 7	AJ0-7276	AJ0-7845	AJ0-8307
Fusion-RP	(C18 Polar Embedded)	1.5 - 10	AJ0-7558	AJ0-7844	AJ0-8306
AQ C18	(Polar Endcapped C18)	1.5 - 7.5	AJ0-7512	AJ0-7843	AJ0-8305
Gemini® NX	(C18 TWIN-NX™ Technology)	1 - 12	AJ0-8369	AJ0-8370	AJ0-8371
Gemini® C18	(C18 TWIN™ Technology)	1 - 12	AJ0-7598	AJ0-7846	AJ0-8308
Gemini® C6-Phenyl	(C6-Phenyl TWIN™ Technology)	1 - 12	—	—	—
Oligo-RP™	(C18 TWIN™ Technology)	1 - 12	AJ0-8136	AJ0-8210	AJ0-8310
Oligo-WAX™	(WA, Weak Anion Exchanger)	1.5 - 11	AJ0-8325	AJ0-8639	AJ0-8420
Guard Cartridge Holders			/holder	/kit	/kit
(reusable holders)			AJ0-7220	AJ0-8223	AJ0-8277

Designed for Prep HPLC columns with 9.0 to 49.0 mm internal diameter (ID)

Material	Description	pH Stability	SEMI-PREP IF YOUR HPLC COLUMN ID (mm) IS: 9.0-16.0	PREP 18.0-29.0	PREP 30.0-49.0
Cartridges for Protein and Polypeptide Reversed Phase			/3 pk	/ea	/ea
<i>For use with silica columns for separation of proteins & peptides, such as Jupiter® (Phenomenex); Vydac® 218TP, 214TP (Alltech Associates, Inc.); SynChropak® 300 C18, C4 (Eprogen, Inc.); Nucleosil® 300 Å C18, C4 (Macherey-Nagel); HYPERSIL® 300 Å (Thermo Hypersil-Keystone), and other wide pore or 300 Å brands.</i>					
Widepore C18	(ODS, Octadecyl)	1.5 - 10	AJ0-7224	AJ0-7230	AJ0-8313
Widepore C5	(Pentyl)	1.5 - 10	AJ0-7371	—	—
Widepore C4	(Butyl)	1.5 - 10	AJ0-7225	AJ0-7231	AJ0-8314
Cartridges for Silica GFC			/3 pk	/ea	—
<i>(Aqueous SEC) For use with silica GFC columns, such as BioSep® (Phenomenex); ZORBAX® GF-Series (Agilent Technologies); Bio-Sil® (Bio-Rad). AD®-H (DACEL Chemical Industries Ltd.)</i>					
GFC-2000	—	2 - 7.5	AJ0-7365	AJ0-8588	—
GFC-3000	—	2 - 7.5	AJ0-7366	AJ0-8589	—
GFC-4000	—	2 - 7.5	AJ0-7367	AJ0-8590	—
Cartridges for Chiral			/3 pk	/ea	/ea
<i>For use with chiral columns, such as Lux® Cellulose-1, -2, -3, -4 & Amylose-2 (Phenomenex); CHIRALCEL® OD-H® & CHIRALCEL® OJ-H®, & CHIRALPAK® AD®-H (DACEL Chemical Industries Ltd.)</i>					
Lux® Cellulose-1	Cellulose tris(3,5-dimethylphenylcarbamate)	2 - 9	AJ0-8404	AJ0-8405	AJ0-8406
Lux® Cellulose-2	Cellulose tris(3-chloro-4-methylphenylcarbamate)	2 - 9	AJ0-8399	AJ0-8400	AJ0-8401
Lux® Cellulose-3	Cellulose tris(4-methylbenzoate)	2 - 9	AJ0-8623	AJ0-8624	AJ0-8625
Lux® Cellulose-4	Cellulose tris(4-chloro-3-methylphenylcarbamate)	2 - 9	AJ0-8628	AJ0-8629	AJ0-8630
Lux® Amylose-2	Amylose tris(5-chloro-2-methyl-phenylcarbamate)	2 - 9	AJ0-8472	AJ0-8473	AJ0-8474
Cartridges for Carbohydrate/Organic Acid			—	/ea	—
<i>For organic acid and carbohydrate analysis, such as Rezex™ (Phenomenex); Aminex® (Bio-Rad); Sugar-Pak™ (Waters).</i>					
Carbo-H*	—	1 - 8	—	AJ0-8888	—
Carbo-Ag**	—	Neutral	—	AJ0-8891	—
Carbo-Pb* ²	—	Neutral	—	AJ0-8890	—
Carbo-Ca* ²	—	Neutral	—	AJ0-8889	—
Guard Cartridge Holders			/holder	/kit	/kit
(reusable holders)			AJ0-7220	AJ0-8223	AJ0-8277

guarantee

If the SecurityGuard Cartridge System does not provide at least an equivalent performance as compared to a competing guard cartridge system, return the product with the comparative data within 45 days for a FULL REFUND.

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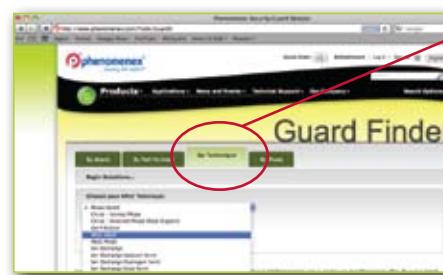
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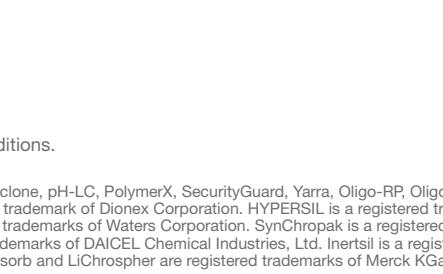
Select the guard selection wizard located on all the HPLC column brand web pages and SecurityGuard web pages



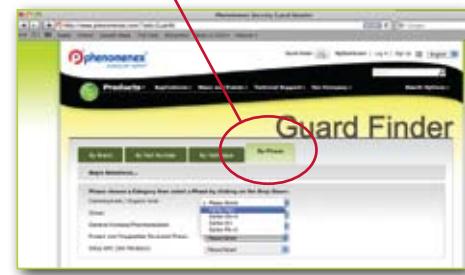
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