

# One Stop Solution for Complete Chromatography Products

## GC Columns

### Fused Silica Capillary Columns

- High Performance Rxi columns
- General purpose columns
- Guard /Retention Gap Columns
- Fast GC Columns
- Application Specific column
- Metal MXT Capillary columns

### PLOT

- Alumina Bond Columns
- Molecular Sieve 5A Columns
- Porous Polymers Columns
- Tubing Scorer

### Packed / Micropacked Columns

- Bonded stationary phases
- Packed Column Tubing
- Packed Column Packing Materials
- Custom Coated Packing Materials
- Application Specific Columns

## HPLC Columns

- Pinnacle™ DB 1.9µm Small Particle Columns  
*C18, Silica, PFP Propyl, Biphenyl, Aqueous C18, Cyano, C18 and IBD Phases*
- pHidelity® C18 5µm Columns
- LC Capillary Columns
- Pinnacle™ DB Biphenyl, 3µm & 5µm Columns
- Pinnacle™ DB PFP Propyl, 3µm & 5µm Columns
- Pinnacle™ DB Silica, 3µm Columns
- Pinnacle™ DB Aqueous C18, 3µm & 5µm Columns
- Pinnacle™ II PAH, 4µm Columns
- Trident HPLC Guard Cartridges  
*Pinnacle™ DB Aqueous C18, Pinnacle™ DB Biphenyl, Pinnacle™ DB PFP Propyl*
- Trident Direct Guard Cartridge system

## GC Accessories

- SKY Inlet Liners Agilent GC's, Bruker /Varian GC's, PerkinElmer GC's, Shimadzu GC's and Thermo Scientific GC's
- Other Deactivations and Inlet Liner accessories.
- Restek Electronic Leak Detector and Flowmeter
- Septa, Ferrules, connectors and Regulators.
- Instruments Supplies for GC's from Agilent, Bruker / Varian, Shimadzu & Thermo Scientific.
- Gas Management Systems and Filters along with Traps.
- Gas Generators and Stations
- Switchover Systems
- Gas Pressure System s and Accessories such as Swagelok Fittings & tubing's.



Digital Flow Meter



Leak Detector

## HPLC Accessories

- HPLC Instrument Supplies along with complete range of Fittngs , connectors , tubings and Lab organizers.
- Mobile Phase Accessories
- LC-MS Genetrators & Traps
- Syringes
- QuEchERS Products for Solid Phase extractions etc.



## Gas Sampling & Air Sampling (SPE Cartridge - Sample Preparation)

Thermal Desorption Unit (TDU) Tubes



## Reference Standards:

- Complete range of reference standards for Clinical, toxicology, forensic, Environmental, Food, flavours, petroleum and Pharmaceutical applications



## GC COLUMNS

### Column Cross-Reference

#### Columns by Phase

Restek	Phase Composition	USP Nomenclature*	Aligent	SGE	Phenomenex	Macherey-Nagel	Supelco	Alltech	Quadrex
Rtx-1 (p.39) MXT-1 (p.93)	dimethyl polysiloxane	G1, G2, G38	HP-1, DB-1, CP Sil 5 CB	BP1	ZB-1	OPTIMA1	SPB-1	00-1AT-1, EC-1	007-1
Rxi-1HT(p.37)	dimethyl polysiloxane		DB-1ht		ZB-1HTInferno			AT-1ht	
Rxi-1ms(p.31)	dimethyl polysiloxane (low bleed)		HP-1,HP-1ms, HP-1msUI DB-1, DB-1ms, DB-1msUI Ultra-1, VF-1ms CP-Sil 5 CB	BP1	ZB-1 ZB-1ms	OPTIMA 1 MS OPTIMA 1 MS Accent	SPB-1 Equity-1	AT-1ms	007-1
Rtx-5(p.40) MXT-5 (p.94)	diphenyl dimethyl polysiloxane	G27, G36	HP-5, DB-5, CP Sil 8 CB	BP5	ZB-5	OPTIMA 5	SPB-5	EC-5 AT-5	007-5
Rxi-5HT(p.37)	diphenyl dimethyl polysiloxane		DB-5ht, VF-5ht	HT5	ZB-5HTInferno	OPTIMA 5HT			
Rxi-5ms(p.31)	diphenyl dimethyl polysiloxane (low bleed)	G27, G36	HP-5, HP-5ms,DB-5 Ultra-2, CP Sil 8 CB	BP-5ms	ZB-5 ZB-5ms	OPTIMA 5 OPTIMA 5MS	SPB-5 Equity-5	AT-5ms	007-5
Rxi-5Sil MS (p.32,57,64,66,73)	1,4-bis( dimethylsiloxy)phenyl- ene dimethyl polysiloxane		DB-5ms, DB-5msUI, VF-5ms, CP Sil 8 CB	BPX5	ZB-5msi	OPTIMA 5HT Accent	SLB-5ms		007-5MS
Rxi-XLB(p.34,60)	unique phase		DB-XLB, VF-XMS		MR1, B-XLB	OPTIMA XLB			
Rtx-20(p.41) MXT-20(p.94)	diphenyl dimethyl polysiloxane						SPB-20	EC-20, AT-20	007-20
Rtx-35(p.41) MXT-35(p.95)	diphenyl dimethyl polysiloxane	G42	HP-35, DB-35	BPX35, BPX608	ZB-35		SPB-35, SPB-608	AT-35, AT-35ms	007-35
Rxi-35Sil MS(p.35)	unique phase		DB-35ms, DB-5msUI, VF-35ms,	BPX 35	MR2	OPTIMA 35MS			
Rtx-50(p.42) MXT-50(p.95)	phenyl methyl polysiloxane	G3					SPB-50	AT-50	007-17
Rxi-17(p.34)	diphenyl dimethyl polysiloxane		HP-50+ , DB-17, DB-17ht DB-608, CP Sil 24 CB		ZB-50	OPTIMA 17	SPB-17		
Rxi-17Sil MS (p.35,65)	unique phase		DB-17ms, VF-17ms CP Sil 24 CB	BPX 50	ZB-50	OPTIMA 17MS			
Rtx-65(p.42) MXT-65(p.95)	diphenyl dimethyl polysiloxane	G17							007-65HT
Rxi-624Sil MS (p.36, 70, 80)	unique phase		DB-624, VF-624ms CP-Select 624 CB	BP624	ZB-624	OPTIMA 624LB			
Rtx-1301(p.45), Rtx-624(p.45), MXT-1301(p.95)	cyanopropylphenyl dimethyl polysiloxane	G43	DB-1301, DB-624ms VF1301ms, VF-624ms, CP-1301	<b>BP624</b>	ZB-624	OPTIMA 1301, OPTIMA 624	SPB-624	AT-624, AT-1301	007-1301, 007-624
Rtx-1701(p.46), MXT-1701(p.96)	cyanopropylphenyl dimethyl polysiloxane	G46	DB-1701R, DB-1701, CP Sil 19 CB, VF-1701ms, VF-1701 Pesticides	BP10	ZB-1701, ZB-1701P	OPTIMA 1701	Equity 1701	AT-1701	007-1701
Rtx-200(p.44), MXT-200(p.96)	trifluoropropylphenyl polysiloxane	G6	DB-210, DB-200, VF-200ms,			OPTIMA 210		AT-210	
Rtx-200MS(p.44)	trifluoropropylphenyl polysiloxane (low bleed)		VF-200ms,						
Rtx-225(p.46)	cyanopropylphenyl phenylmethyl polysiloxane	G7,G19	DB-225ms, CP Sil 43 CB	BP225		OPTIMA 225	SPB-225	AT-225	007-225
Rtx-440(p.43)	unique phase					<b>Restek innovation</b>			
Rtx-2330(p.47)	biscyanopropyl cyanopropylphenyl polysiloxane	G48	VF-23ms,	BPX70			SP-2330 SP-2331 SP-2380	AT-Silar90	007-23
Rtx-2560(p.47,71)	biscyanopropyl polysiloxane		HP-88, CP Sil 88				SP-2560		
Rtx-Wax(p.48)	polyethylene glycol	G14, G15, G16 G20, G39	DB-Wax, CP Wax 52CB	BP20	ZB-Wax	OPTIMA WAX		AT-WAXms, EC-WAX	<b>007-CW</b>
Stabilwax (p.49,81) MXT-WAX (p.96)	polyethylene glycol	G14, G15, G16 G20, G39	HP-InnoWax, CP Wax 52CB, VFWAX MS		ZB-WAXplus	OPTIMA WAXplus	Supelcowax-10	AT-WAX	

See page 103 for Restek PLOT Column Phase Cross-Reference Chart.

\*See page 131 for our USB Liquid Phase and Solid Support Cross-Reference Chart.

# GC COLUMNS

## Column Cross-Reference

### Columns by Application/Industry

Restek	Applications	Aligent	Supelco	Macherey-Nagel	SGE	Alltech	Phenomenex
<b>Chiral Columns</b>							
Rt-βDEXm, Rt-βDEXsm, Rt-βDEXse, Rt-βDEXsp, Rt-βDEXsa, Rt-βDEXcst, Rt-γDEXsa (p.89)	Chiral compounds						
<b>Clinical, Forensic &amp; Toxicology</b>							
Rtx-BAC Plus 1(p.55)	Blood alcohol testing	DB-ALC1					ZB-BAC1
Rtx-BAC Plus 2(p.55)		DB-ALC2					ZB-BAC2
<b>Environmental</b>							
Rxi-5Sil MS(p.57,64,66)	Semivolatile - EPA Methods 8270, 525, 525	DB-5ms, DB-5msUI VF-5ms, CP-Sil 8CB	SLB- 5ms	OPTIMA 5MS Accent	BPX5		ZB5msi
RTX-VMS(p.67)	Volatiles-EPA Methods 8260,624,524	<b>Restek innovation</b>					
Rxi-624 Sil MS(p.70)	Volatiles-EPA Methods 624	DB-624, VF-624ms, CP-Select 624CB		OPTIMA 624 LB	BP 624		ZB 624
Rtx-502.2(p.69)	Volatiles-EPA Methods 8010, 8020, 502.2, 601, 602	DB-502.2	VOCOL			AT-502.2	
Rtx-Volatiles(p.69)			VOCOL				
Rtx-VRX(p.68)		DB-VRX					
Rtx-CLPesticides(p.62)	Organochlorine Pesticides - EPA Methods 8010,8020,608,505,508	DB-CLIP1					
Rtx-CLPesticides2(p.62)		DB-CLIP2					
Rtx-1614(p.56)	Borinated Flame retardants	<b>Restek innovation</b>					
Rtx-PCB(p.59)	Polychlorinated biphenyl - EPA Methods 8062,608 PCB congeners	<b>Restek innovation</b>					
Rxi-XLB(p.60)		DB-XLB-VF-XMS					MR1, ZB-XLB
Rtx-OPPesticides(p.61)	Organophosphorus Pesticides - EPA Method 8141	<b>Restek innovation</b>					
Rtx-OPPesticides2(p.61)		<b>Restek innovation</b>					
Rtx-Dioxin2(p.58)	Dioxin & Furans EPA Methods	<b>Restek innovation</b>					
Rxi-17Sil MS(p.65)	Polycyclic aromatic hydrocarbons	DB-17ms, VF-17ms CP-Sil24 CB		OPTIMA 1 MS	BPX50		ZB-50
<b>Foods, Flavors &amp; Fragrances</b>							
Rt-2560(p.71)	cis/trans FAMES	HP-88	SPB-2560				
FAMEWAX(p.71)	Marine oils	Select FAME	Omegawax			AT-AquaWax AT-FAME	
Rxi-PAH(p.72)	PAHs	<b>Restek innovation</b>					
Rtx-65 TG(p.74)	Triglycerides	<b>Restek innovation</b>					
<b>Petroleum &amp; Petrochemical</b>							
Rt-Alumina BOND/CFC(p.108)	Chlorinated fluorocarbons (CFCs)						
Rtx-DHA(p.77)	Detailed hydrocarbons analysis	HP-PONA-DB-Petro, CP Sil PONA CB	Petrocol DH		BP1PONA		
Rtx-2887(p.79)	Hydrocarbons - ASTM 288	DB-2887	Petrocol 2887			AT-2887	
MXT-2887(p.99)			Petrocol EX2887				
D-3606(p.121)	Ethanol ASTM 3606	<b>Restek innovation</b>					
Rt-CTEP(p.75)		CP-TCEP	TCEP				
Rtx-Mineral Oil(p.78)	DIN ENISO 9377-2	Select Mineral Oil	Select Mineral Oil	Select Mineral Oil	Select Mineral Oil		
MXT-1HT SimDist(p.100)	Simulated distillation	DB-HT-SimDis, CP-SimDist, CP-SimDst Ultimetel			BPX1	AT-3710	ZB-1XT SIMDIST
MXT-1 SimDist(p.101)		DB-HT-SimDis, CP-SimDist, CP-SimDst Ultimetel	CP-SIMDIST	CP-SIMDIST	CP-SIMDIST		
MXT-500 SimDist(p.101)		<b>Restek innovation</b>					
Rtx-Biodiesel TG(p.76)	Triglycerides in biodiesel	Biodiesel, Select Biodiesel		OPTIMA Biodiesel			ZB-Bioethanol
MXT-Biodiesel TG(p.99)							
<b>Pharmaceutical</b>							
Rtx-G27 w/IntegraGuard(p.83)	Organic volatile impurities (OVI)- USP 467						
Rtx-G43 w/IntegraGuard(p.83)			OVI-G43				
Rxi-624Sil MS(p.80)		DB-624, VF-624ms, CP-Select 624CB		OPTIMA 624 LB	BP-624		ZB-624
Rtx-(G27)(p.83)		HP-5, DB-5, CP-Sil 8 CB	SPB-5	OPTIMA-5	BP-5	EC-5, AT-5	ZB-5
Stabilwax (G16)(p.81)		HP-INNOWax, CPwax 52CB, VF-WAX MS	Supelcowax-10	OPTIMAWAXplus		AT-CAM	ZB WAXplus
<b>Specially deactivated phases</b>							
Rtx-Volatile Amine(p.85)	Volatile amines	CP-VolAmine,					
Rtx-5Amine(p.86)	Amines	CP-Sil 8 CB		OPTIMA 5 Amine			
Rtx-35Amine(p.87)		<b>Restek innovation</b>					
Stabilwax-DB(p.88)		CAM, CP WAX 51	Carbonwax Amine	FS-CW 20 M-AM		AT-CAM	
Stabilwax-DA(p.84)	Free fatty acids	HP-FFAP, DB-FFAP, VF-DA, CP WAX58 CB, CP-FFAP CB	Nukol	PERMABOND FFAP, OPTIMA FFAP, OPTIMA FFAP Plus	BP-21	AT-AquaWax DA AT-1000	ZB-FFAP



# New LC Columns with

Reproducibility, Ruggedness & Performance you demand.

Restek is a leading developer and manufacturer of chromatography products. When it comes to LC peak separations and most important, peak resolution, selectivity is the most influential factor to consider and it is what led Restek to develop Ultra Selective Liquid Chromatography™ (USLC®) technology. USLC® column sets offer the widest range of selectivity in the industry using just a handful of phases to simplify LC column selection for fast, effective method development. We offer LC columns for the latest UHPLC systems as well as for your tried-and-true HPLCs

## Restek features the following LC columns

### Force FluoroPhenyl LC Columns

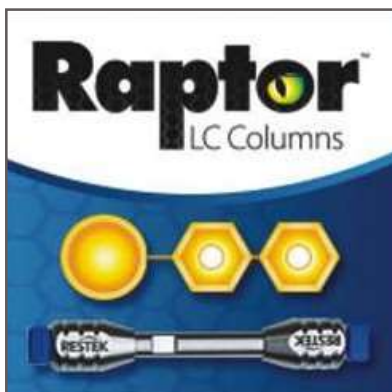
Capable of both reversed-phase and HILIC (Hydrophilic Interaction Liquid Chromatography) separations. Ideal for increasing sensitivity and selectivity in LC-MS analyses. Offers increased retention for charged bases.

### Force C18 LC Columns

A traditional end-capped C18 ideal for general-purpose use in reversed-phase chromatography. Wide pH range (2-8) provides excellent data quality for many applications, matrices and compounds. Offers high hydrophobic retention.

### Force Biphenyl LC Columns

Ideal for bioanalytical testing applications like drug and metabolite analyses. Heightened selectivity and retention for compounds that are hard to resolve or elute early on C18 and other phenyl chemistries. Limits ionization suppression and allows simple, MS-friendly mobile phases.



### Raptor™ LC Columns:

A new species of LC column that combines the speed of superficially porous particles (SPP or "core-shell") with USLC® selectivity

**231 compounds, 40+ isobars, 10 drug classes, 22 ESI- compounds in 10 minutes with Raptor™ Biphenyl LC Column**

### Roc™ LC Columns:

LC columns packed with high-purity silica that delivers the solid performance you demand for conventional HPLC applications

**Pressure rated for any 400-bar HPLC system. Solid and reliable-delivers the peak shape,**

## Ultra LC Columns:

High-purity, type-B silica that minimizes activity and creates high-density bonding for reliable HPLC use.

## Pinnacle® DB LC Columns:

Restek-manufactured, base-deactivated silica support that is optimized for UHPLC column stability.

## Viva LC Columns:

Rugged, spherical particles with a wide 300<sup>o</sup> A pore size and narrow distribution that are designed for large-molecule separations.



Our wide range of LC columns are available with:

<b>Available Phases</b>	<b>C1, C4, C8, C18, Phenyl/ Cyno/ Amine</b>
<b>Particle Size</b>	<b>1.7 um to 10 um</b>

Also available with:



- LC Capillary Columns
- Guard Cartridge & Filters
- LC Column heater
- LC Organizers
- HPLC Accessories
- LC Column Heater
- QuEchErs Products for Solid Phase Extractions etc.  
Fast, Simple Sample Prep for Multiresidue Pesticide Analysis
- Sky® liners
- Complete supplier for world-class LC-MS/MS and GC-MS/MS multiresidue pesticide analysis



Calibrate for 204 Pesticides by GC-MS/MS With Single Restek® CRM Kit

## U.S . Pharmacopela Cross-Reference

- L1** Octadecyl silane chemically bonded to porous silica or ceramic microparticles; 1.7 $\mu$ m in diameter, or a monolithic rod.  
*Pinnacle® DB C18 (p.143), Pinnacle® DB Aqueous C18 (p.144), Ultra C18 (p.149), Ultra Aqueous C18 (p.151), Viva C18 (p.155) Raptor™ ARC- C18, Raptor™ C18, ROC C18 , Force C18*
- L3** Porous silica particles; 5 to 10  $\mu$ m in diameter.  
*Pinnacle® DB Silica (p.147), Ultra Silica (p.154), Viva Silica (p.157), ROC Silica.*
- L7** Octadecyl silane chemically bonded to totally porous silica particles; 1.7 to 10  $\mu$ m in diameter.  
*Pinnacle® DB C8 (p.143), Ultra C8 (p.149), Viva C8 (p.155), ROC C8*
- L8** An essentially monomolecular layer of aminopropylsilane chemically bonded to totally porous gel support; 3 to 10  $\mu$ m in diameter.  
*Ultra Amino (p.154)*
- L10** Nitrile groups chemically bonded to porous silica particles; 3 to 10  $\mu$ m in diameter.  
*Pinnacle® DB Cyano (p.147), Ultra Cyano (p.154), ROC Cyno.*
- L11** Phenyl groups chemically bonded to porous silica particles; 1.7 to 10  $\mu$ m in diameter.  
*Pinnacle® DB Biphenyl (p.145), Ultra Aromax (p.151), Ultra Biphenyl (p.142), Raptor™ Biphenyl, ROC Phenyl -Hexyl, Force Biphenyl*
- L13** Trimethylsilane chemically bonded to porous silica particles; 3 to 10  $\mu$ m in diameter.  
*Ultra C1 (p.150)*
- L26** Butyl silane chemically bonded to totally porous silica particles; 3 to 10  $\mu$ m in diameter.  
*Ultra C4 (p.150) Viva C4 (p.156)*
- L43** Pentafluorophenyl groups chemically bonded to porous silica particles by a propyl spacer; 5 to 10  $\mu$ m in diameter.  
*Pinnacle® DB PFP Propyl (p.146), Ultra PFP Propyl (p.153), Viva PFP Propyl (p.156), Raptor FluoroPhenyl, Force FluoroPhenyl*
- L68** Spherical, porous silica 100  $\mu$ m or less in diameter, the surface of which has been covalently modified with alkyl amide groups and not end-capped.  
*Pinnacle® DB IBDI (p.146), Ultra IBD (p.153)*

### EXP fittings

#### Reusable fittings for easy, yet reliable HPLC & UHPLC connections

- Hand-tight fitting style achieves effortless HPLC seals - no tools needed!
- Both hand tight and hex-head styles wrench-tighten for reliable UHPLC use.
- Patented ferrule can be installed repeatedly without compromising high-pressure seal.
- Hybrid design combines the durability of titanium with the sealing ability of PEEK.
- Cutting-edge system provides ZDV (zero dead volume) connection to any 10-32 female port.
- Compatible with 1/16" PEEK and stainless steel tubing.

