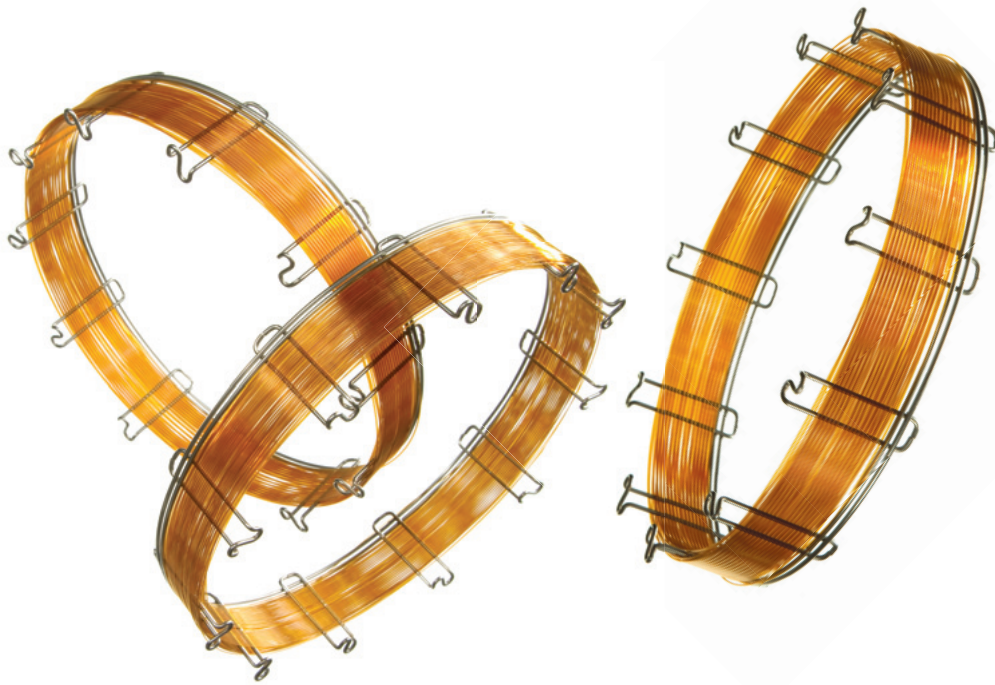


GC Column Guide



GC Column Guide



Contents

Fused Silica

SH-Rxi™-1ms Columns P.4
SH-Rxi™-5ms Columns

SH-Rxi™-5Sil MS Columns P.5
SH-Rxi™-5HT Columns

SH-Rxi™-17 Columns P.6
SH-Rxi™-17Sil MS Column
SH-Rxi™-624Sil MS Columns

SH-Rtx™-1 Columns P.7

SH-Rtx™-1 PONA P.8
SH-Rtx™-5/Rtx™-5MS
SH-Rtx™-5 Columns

SH-Rtx™-5MS—Low-Bleed GC-MS Columns P.9
SH-Rtx™-5Sil MS Columns
SH-Rtx™-35 MS Column

SH-Rtx™-50 Columns P.10
SH-Rtx™-200/Rtx™-200MS
SH-Rtx™-200 Columns

SH-Rtx™-200MS—Low-Bleed GC-MS Columns P.11
SH-Rtx™-1301 (G43) Columns

SH-Rtx™-624 Columns P.12
SH-Rtx™-1701 Columns

SH-Rtx™-Wax Columns P.13
SH-Stabilwax™ Columns

Fused Silica PLOT

SH-Rt™-Alumina BOND/KCl Column P.14
SH-Rt™-Msieve 5A Columns
SH-Rt™-Q-BOND Columns

Stainless Steel

SH-MXT™-1 Column P.15
SH-MXT™-5 Column

Specific Use

Acidic Compounds Analysis P.16
SH-Stabilwax™-DA Column
Blood Alcohol Analysis
SH-Rtx™-BAC1 Column

Pesticides Analysis P.17
SH-Rtx™-OPPesticides2 Column
SH-Rtx™-CLPesticides Column

Guard Column

Innovative Integra-Guard™ Columns P.18

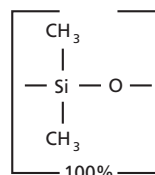
Fused Silica

SH-Rxi™-1ms Columns

nonpolar phase; Crossbond™ dimethyl polysiloxane

- General-purpose columns for arson accelerants, essential oils, hydrocarbons, pesticides, PCB congeners (e.g., Aroclor mixes), sulfur compounds, amines, solvent impurities, simulated distillation, oxygenates, gasoline range organics (GRO), refinery gases.
- Tested and guaranteed for ultra-low bleed; improved signal-to-noise ratio for better sensitivity and mass spectral integrity.
- Temperature range: -60 °C to 330/350 °C (bleed-tested temperature/maximum operating temperature).
- Equivalent to USP G2 phase.

SH-Rxi™-1ms Structure



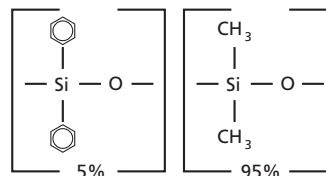
ID	df	Temp. limits	20-Meter	30-Meter	60-Meter
0.18 mm	0.18 μm	-60 to 330/350 °C	221-75921-20		
0.25 mm	0.25 μm	-60 to 330/350 °C		221-75923-30	
	0.50 μm	-60 to 330/350 °C			221-75924-60
0.32 mm	0.25 μm	-60 to 330/350 °C		221-75926-30	
	1.00 μm	-60 to 330/350 °C			221-75928-60

SH-Rxi™-5ms Columns

low polarity phase; Crossbond™ diphenyl dimethyl polysiloxane

- General-purpose columns for semivolatiles, phenols, amines, residual solvents, drugs of abuse, pesticides, PCB congeners (e.g., Aroclor mixes), solvent impurities.
- Most inert column on the market.
- Tested and guaranteed for ultra-low bleed; improved signal-to-noise ratio for better sensitivity and mass spectral integrity.
- Temperature range: -60 °C to 330/350 °C (bleed-tested temperature/maximum operating temperature).
- Equivalent to USP G27 phase.

SH-Rxi™-5ms Structure



ID	df	Temp. limits	15-Meter	30-Meter	60-Meter
0.25 mm	0.25 μm	-60 to 330/350 °C	221-75940-15	221-75940-30	
	0.50 μm	-60 to 330/350 °C		221-75941-30	221-75942-60
0.32 mm	0.25 μm	-60 to 330/350 °C		221-75943-30	
	0.50 μm	-60 to 330/350 °C		221-75944-30	

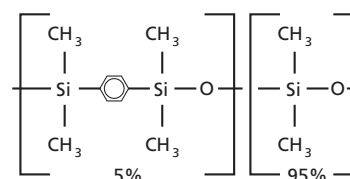
SH-Rxi™-5Sil MS Columns

low polarity phase; Crossbond™ 1,4-bis(dimethylsiloxy)phenylene dimethyl polysiloxane

- Engineered to be a low-bleed GC-MS column.
- Excellent inertness for active compounds.
- General-purpose columns—ideal for GC-MS analysis of semivolatiles, polycyclic aromatic compounds, chlorinated hydrocarbons, phthalates, phenols, amines, organochlorine pesticides, organophosphorus pesticides, drugs, solvent impurities, and hydrocarbons.
- Temperature range: -60 °C to 350 °C.

The SH-Rxi™-5Sil MS stationary phase incorporates phenyl groups in the polymer backbone. This improves thermal stability, reduces bleed, and makes the phase less prone to oxidation. SH-Rxi™-5Sil MS columns are ideal for GC-MS applications requiring high sensitivity, including use in ion trap systems.

SH-Rxi™-5Sil MS Structure



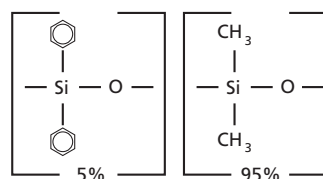
ID	df	Temp. limits	30-Meter
0.25 mm	0.25 μm	-60 to 320/350 °C	221-75954-30
	1.00 μm	-60 to 320/350 °C	221-75956-30

SH-Rxi™-5HT Columns

low polarity phase; diphenyl dimethyl polysiloxane

- 40% longer lifetime from specially designed fused silica tubing.
- Columns processed for high-temperature applications, such as mineral oil.
- Temperature range: -60 to 400 °C.

SH-Rxi™-5HT Structure



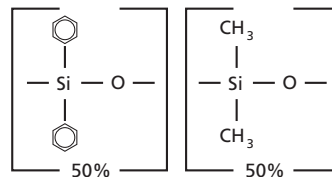
ID	df	Temp. limits	15-Meter	30-Meter
0.25 mm	0.10 μm	-60 to 400 °C	221-75933-15	
	0.25 μm	-60 to 400 °C		221-75934-30

SH-Rxi™-17 Columns

midpolarity phase; Crossbond™ diphenyl dimethyl polysiloxane

- General-purpose columns for pesticides, herbicides, rosin acids, phthalate esters, triglycerides, sterols.
- Temperature range: 40 °C to 320 °C.

SH-Rxi™-17 Structure



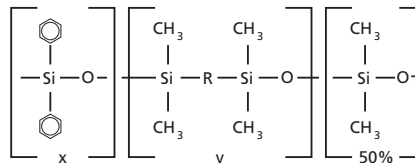
ID	df	Temp. limits	30-Meter
0.25 mm	0.25 μm	40 to 280/320 °C	221-75907-30
0.53 mm	1.00 μm	40 to 280/320 °C	221-76193-30

SH-Rxi™-17Sil MS Column

midpolarity Crossbond™ phase

- 340/360 °C upper temperature limits.
- Excellent inertness and selectivity for active environmental compounds, such as PAHs.
- Equivalent to USP phase G3.
- Low bleed for use with sensitive detectors, such as MS.

SH-Rxi™-17Sil MS Structure



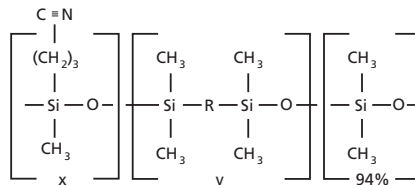
ID	df	Temp. limits	30-Meter
0.25 mm	0.25 μm	40 to 340/360 °C	221-75916-30

SH-Rxi™-624Sil MS Columns

midpolarity Crossbond™ phase

- Low-bleed, high-thermal stability column—maximum temperatures up to 320 °C.
- Inert—excellent peak shape for a wide range of compounds.
- Selective—highly selective for volatiles analysis and residual solvents, great choice for USP<467>.
- Manufactured for column-to-column reproducibility—well-suited for validated methods.

SH-Rxi™-624Sil MS Structure



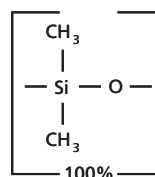
ID	df	Temp. limits	30-Meter	60-Meter
0.25 mm	1.40 μm	-20 to 300/320 °C	221-75962-30	
	1.80 μm	-20 to 300/320 °C		221-75963-60

SH-Rtx™-1 Columns

nonpolar phase; Crossbond™ dimethyl polysiloxane

- General-purpose columns for solvent impurities, PCB congeners (e.g. Aroclor mixes), simulated distillation, arson accelerants, gases, natural gas odorants, sulfur compounds, essential oils, hydrocarbons, semivolatiles, pesticides, oxygenates.
- Temperature range: -60 °C to 350 °C.
- Equivalent to USP G1, G2, G38 phases.

SH-Rtx™-1 Structure



SH-Rtx™-1 columns exhibit long lifetime and very low bleed at high operating temperatures.

ID	df	Temp. limits	10-Meter	15-Meter	25-Meter	30-Meter	60-Meter	105-Meter
0.25 mm	0.10 µm	-60 to 330/350 °C		221-75718-15		221-75718-30		
	0.25 µm	-60 to 330/350 °C	221-75719-10		221-75719-25	221-75719-30	221-75719-60	
	1.00 µm	-60 to 320/340 °C						221-75721-05
0.32 mm	0.25 µm	-60 to 330/350 °C				221-75723-30	221-75723-60	
	0.50 µm	-60 to 330/350 °C				221-75724-30		
	1.00 µm	-60 to 320/340 °C				221-75725-30	221-75725-60	
	5.00 µm	-60 to 260/280 °C				221-75728-30	221-75728-60	
0.53 mm	0.25 µm	-60 to 320/340 °C				221-75729-30		
	0.50 µm	-60 to 310/330 °C		221-75730-15		221-75730-30		
	1.00 µm	-60 to 310/330 °C		221-75731-15		221-75731-30	221-75731-60	
	1.50 µm	-60 to 310/330 °C		221-75732-15		221-75732-30		
	3.00 µm	-60 to 270/290 °C				221-75733-30	221-75733-60	
	5.00 µm	-60 to 270/290 °C				221-75734-30	221-75734-60	

*Maximum temperatures listed are for shorter length columns. Longer columns may have a different maximum temperature.

SH-Rtx™-1 PONA

nonpolar phase; Crossbond™ dimethyl polysiloxane

- Compatible with ASTM and CGSB for hydrocarbon Analysis.

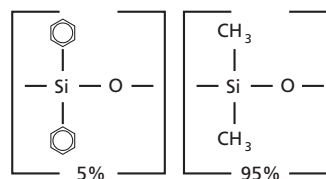
ID	df	Temp. limits	100-Meter
0.25 mm	0.50 µm	-60 to 300/340 °C	221-76196-00

SH-Rtx™-5/Rtx™-5MS

- General-purpose columns for drugs, solvent impurities, pesticides, hydrocarbons, PCB congeners (e.g., Aroclor mixes), essential oils, semivolatiles.
- Temperature range: -60 °C to 350 °C.
- Equivalent to USP G27 and G36 phases.

The diphenyl dimethyl polysiloxane stationary phase is the most popular GC stationary phase and is used in a wide variety of applications. All residual catalysts and low molecular weight fragments are removed from the SH-Rtx™-5 polymer, providing a tight mono-modal distribution and extremely low bleed.

SH-Rtx™-5/Rtx™-5MS Structure



SH-Rtx™-5 Columns

low polarity phase; Crossbond™ diphenyl dimethyl polysiloxane

ID	df	Temp. limits	15-Meter	25-Meter	30-Meter	60-Meter
0.25 mm	0.10 µm	-60 to 330/350 °C	221-75700-15		221-75700-30	
	0.25 µm	-60 to 330/350 °C			221-75701-30	
	0.50 µm	-60 to 330/350 °C		221-76178-25	221-76178-30	
	1.00 µm	-60 to 325/340 °C			221-75702-30	
0.32 mm	0.25 µm	-60 to 330/350 °C	221-75703-15		221-75703-30	221-75703-60
	0.50 µm	-60 to 330/350 °C			221-75704-30	
	1.00 µm	-60 to 325/340 °C			221-75705-30	221-75705-60
	1.50 µm	-60 to 310/330 °C			221-76181-30	
0.53 mm	0.25 µm	-60 to 320/340 °C			221-75708-30	
	0.50 µm	-60 to 320/330 °C			221-75709-30	
	1.00 µm	-60 to 320/330 °C	221-75710-15		221-75710-30	221-75710-60
	1.50 µm	-60 to 310/330 °C	221-75711-15		221-75711-30	
	3.00 µm	-60 to 270/290 °C			221-75712-30	
	5.00 µm	-60 to 270/290 °C			221-75713-30	221-75713-60

*Maximum temperatures listed are for shorter length columns. Longer columns may have a different maximum temperature.

SH-Rtx™-5MS—Low-Bleed GC-MS Columns

low polarity phase; Crossbond™ diphenyl dimethyl polysiloxane

Column specifically tested for low-bleed performance.

ID	df	Temp. limits	15-Meter	30-Meter	60-Meter
0.25 mm	0.10 µm	-60 to 330/350 °C	221-75854-15	221-75854-30	
	0.25 µm	-60 to 330/350 °C	221-75855-15	221-75855-30	
	1.00 µm	-60 to 325/350 °C		221-75857-30	
0.32 mm	0.25 µm	-60 to 330/350 °C		221-75858-30	221-75858-60
0.53 mm	0.50 µm	-60 to 320/340 °C		221-76191-30	

*Maximum temperatures listed are for shorter length columns. Longer columns may have a different maximum temperature.

SH-Rtx™-5Sil MS Columns

equivalent selectivity of Crossbond™ 5% diphenyl/95% dimethyl polysiloxane

The SH-Rtx™-5Sil MS is a low column is a low-bleed, dimethyl/phenyl phase. The combination of polymer chemistry and rigorous QA testing ensures that each MS column exceeds requirements of the most sensitive mass spectrometers.

ID	df	Temp. limits	20-Meter	30-Meter
0.18 mm	0.18 µm	-60 to 330/350 °C	221-76195-20	
0.25 mm	0.25 µm	-60 to 330/350 °C		221-76127-30
0.32 mm	0.25 µm	-60 to 330/350 °C		221-76192-30

SH-Rtx™-35 MS Column

ID	df	Temp. limits	30-Meter
0.25 mm	0.25 µm	40 to 320 °C	221-75835-30

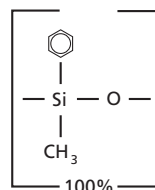
SH-Rtx™-50 Columns

midpolarity phase; Crossbond™ phenyl methyl polysiloxane

- General-purpose columns for pesticides, herbicides, rosin acids, phthalate esters, sterols.
- Temperature range: 40 °C to 320 °C.
- Equivalent to USP G3 phase.

The high thermal stability of SH-Rtx™-50 columns makes possible dual-column analysis with common phases such as SH-Rtx™-1 or SH-Rtx™-5MS.

SH-Rtx™-50 Structure



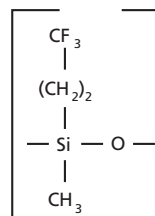
ID	df	Temp. limits	30-Meter
0.25 mm	0.25 μm	40 to 300/320 °C	221-75838-30
0.32 mm	0.25 μm	40 to 300/320 °C	221-76182-30

SH-Rtx™-200/Rtx™-200MS

- General-purpose columns for solvents, Freon™ fluorocarbons, alcohols, ketones, silanes, glycols, and drugs of abuse. Excellent confirmation column with an SH-Rtx™-5 column for phenols, nitrosamines, organochlorine pesticides, chlorinated hydrocarbons, and chlorophenoxy herbicides.
- Temperature range: -20 °C to 340 °C.
- Equivalent to USP G6 phase.

SH-Rtx™-200 columns have accomplished many difficult separations not possible on any other bonded stationary phase. Many analysts consider these the best, most inert midpolarity columns available. The trifluoropropylmethyl polysiloxane stationary phase has a unique selectivity that changes elution orders and resolves compounds that phenyl, cyano, or Carbowax™ phases can not. The SH-Rtx™-200 column offers exceptional thermal stability, low bleed, and superior inertness—even for active compounds such as phenols, and with sensitive detectors such as ECDs, NPDs, and MSDs.

SH-Rtx™-200 Structure



SH-Rtx™-200 Columns

midpolarity phase; Crossbond™ trifluoropropylmethyl polysiloxane

ID	df	Temp. limits	30-Meter	105-Meter
0.25 mm	1.00 μm	-20 to 290/310 °C	221-75800-30	
0.32 mm	1.50 μm	-20 to 280/300 °C		221-75804-15

SH-Rtx™-200MS—Low-Bleed GC-MS Columns

midpolarity phase; Crossbond™ trifluoropropylmethyl polysiloxane

Column specifically tested for low-bleed performance.

ID	df	Temp. limits	30-Meter
0.25 mm	0.25 μm	-20 to 320/340 °C	221-75811-30
0.32 mm	0.25 μm	-20 to 320/340 °C	221-75814-30

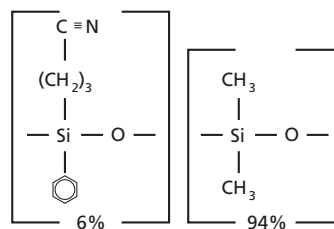
SH-Rtx™-1301 (G43) Columns

low to midpolarity phase; Crossbond™ cyanopropylphenyl dimethyl polysiloxane

- General-purpose columns for residual solvents, alcohols, oxygenates, and volatile organic compounds.
- Temperature range: -20 °C to 280 °C.
- Equivalent to USP G43 phase.

Many analysts feel the SH-Rtx™-1301 column has the best cyanosiloxane bonded stationary phase available, with no other column manufacturer providing lower bleed, longer lifetime, or better inertness. Our polymer is fully characterized to ensure long-term reproducibility, column-to-column consistency, and low bleed—even with sensitive detectors such as ECDs and MSDs.

SH-Rtx™-1301 Structure



ID	df	Temp. limits	30-Meter	60-Meter
0.25 mm	0.25 μm	-20 to 280 °C	221-76194-30	221-76194-60
0.53 mm	3.00 μm	-20 to 240 °C	221-75776-30	221-75776-60

*Maximum temperatures listed are for shorter length columns. Longer columns may have a different maximum temperature.

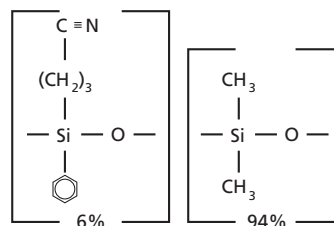
SH-Rtx™-624 Columns

low to midpolarity phase; Crossbond™ cyanopropylphenyl dimethyl polysiloxane

- Application-specific columns for volatile organic pollutants. Recommended in U.S. EPA methods for volatile organic pollutants.
- Temperature range: -20 °C to 240 °C.
- Equivalent to USP G43 phase.

The unique polarity of the SH-Rtx™-624 column makes it ideal for analyzing volatile organic pollutants. The SH-Rtx™-624 phase produces greater than 90% resolution of the first six gases in EPA Methods 8260 and 524.2. This stationary phase is especially well-suited for EPA Method 524.2 since it resolves 2-nitropropane from 1,1-dichloropropanone, which share quantification ion m/z 43 and must be separated chromatographically.

SH-Rtx™-624 Structure



ID	df	Temp. limits	30-Meter	60-Meter	75-Meter
0.25 mm	1.40 μm	-20 to 240 °C	221-75863-30		
0.32 mm	1.80 μm	-20 to 240 °C	221-75864-30	221-75864-60	
0.53 mm	3.00 μm	-20 to 240 °C	221-75865-30	221-75865-60	221-75865-75

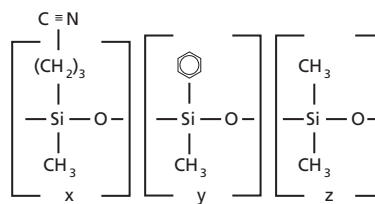
SH-Rtx™-1701 Columns

midpolarity Crossbond™ phase

- General-purpose columns for alcohols, oxygenates, PCB congeners (e.g. Aroclor mixes), pesticides.
- Temperature range: -20 °C to 280 °C.
- Equivalent to USP G46 phase.

SH-Rtx™-1701 is one of the more popular stationary phases used in capillary GC. The mix of cyano and phenyl functional groups increases the polarity and offers a different elution order relative to less polar SH-Rtx™-1 or SH-Rtx™-5 columns. An SH-Rtx™-1701 column is ideal for confirmation analysis in combination with an SH-Rtx™-5 column. The polymer is fully characterized to ensure long-term reproducibility, column-to-column consistency, and low bleed, even with sensitive detectors such as ECDs and MSDs.

SH-Rtx™-1701 Structure



ID	df	Temp. limits	15-Meter	30-Meter	60-Meter
0.25 mm	0.25 μm	-20 to 280 °C		221-75777-30	
	0.50 μm	-20 to 270/280 °C		221-75778-30	
	1.00 μm	-20 to 260/280 °C		221-75779-30	
0.32 mm	0.10 μm	-20 to 280 °C		221-76184-30	
	0.25 μm	-20 to 280 °C	221-75780-15	221-75780-30	221-75780-60
	0.50 μm	-20 to 270/280 °C		221-75781-30	
0.53 mm	1.00 μm	-20 to 260/280 °C		221-75782-30	221-75782-60
	1.00 μm	-20 to 250/270 °C		221-75785-30	

*Maximum temperatures listed are for shorter length columns. Longer columns may have a different maximum temperature.

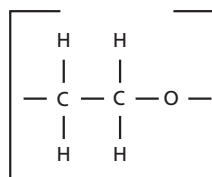
SH-Rtx™-Wax Columns

polar phase; Crossbond™ polyethylene glycol

- Best polyethylene glycol (PEG) phase for alkenols, glycols, and aldehydes.
- Temperature range: 20 °C to 250 °C.
- Equivalent to USP G14, G15, G16, G20, G39 phases.

SH-Rtx™-Wax columns are the most inert and efficient PEG columns currently available. The extended operating temperature range allows analysis of compounds having a wide volatility range, and ensures low bleed at temperatures as high as 250 °C. Selectivity is comparable to other Carbowax™ columns for compounds of intermediate to high polarity.

SH-Rtx™-Wax Structure



ID	df	Temp. limits	15-Meter	20-Meter	30-Meter	50-Meter	60-Meter
0.25 mm	0.10 µm	20 to 250 °C			221-76186-30		
	0.25 µm	20 to 250 °C			221-75893-30	221-75893-50	221-75893-60
	0.50 µm	20 to 250 °C			221-75894-30		221-75894-60
0.32 mm	0.10 µm	20 to 250 °C			221-76187-30		
	0.25 µm	20 to 250 °C		221-75895-20	221-75895-30		221-75895-60
	0.50 µm	20 to 250 °C			221-75896-30	221-75896-50	221-75896-60
	1.00 µm	20 to 240/250 °C			221-75897-30		221-75897-60
0.53 mm	0.25 µm	20 to 250 °C			221-75898-30		
	0.50 µm	20 to 250 °C			221-76188-30		
	1.00 µm	20 to 240/250 °C	221-75899-15		221-75899-30		221-75899-60

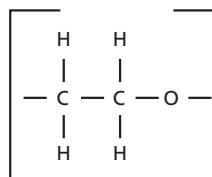
*Maximum temperatures listed are for 15- and 30-meter lengths. Longer lengths may have a slightly reduced maximum temperature.

SH-Stabilwax™ Columns

polar phase; Crossbond™ polyethylene glycol

- Most stable polyethylene glycol (PEG) column available.
- Rugged enough to withstand repeated water injections.
- Lowest-bleed PEG column on the market; long column lifetimes.
- Temperature range: 40 °C to 260 °C.
- Equivalent to USP G14, G15, G16, G20, and G39 phases.

SH-Stabilwax™ Structure



The polar-deactivated surface tightly binds the Carbowax™ polymer and increases thermal stability, relative to competitive columns. Because of the increased stability produced by the bonding process, SH-Stabilwax™ columns exhibit long column lifetimes, even when programming repeatedly up to 260 °C. The bonding mechanism of the column also produces polar compound retention times that do not shift, as is often observed on other wax-type columns. In addition, this bonding mechanism produces a column that can be rejuvenated by solvent washing. SH-Stabilwax™ columns are used for a wide range of compounds and matrices including: FAMES, flavor compounds, essential oils, solvents, aromatics (including xylene isomers), acrolein/acrylonitrile (EPA 603), and oxygenated compounds. Also used for purity testing of chemicals and analyzing impurities in water matrices and alcoholic beverages.

ID	df	Temp. limits	30-Meter	60-Meter
0.32 mm	0.25 µm	40 to 250/260 °C	221-75972-30	
	0.50 µm	40 to 250/260 °C		221-75975-60
0.53 mm	1.00 µm	40 to 240/250 °C	221-75979-30	

Fused Silica PLOT

SH-Rt™-Alumina BOND/KCl Column

KCl deactivation

- Low moisture sensitivity reduces the need for frequent regeneration.
- Acetylene elutes before *n*-butane.
- Methyl acetylene (impurity in 1,3-butadiene) elutes before 1,3-butadiene.

ID	df	Temp. limits	50-Meter
0.53 mm	10 µm	to 200 °C	221-76139-50

SH-Rt™-Msieve 5A Columns

SH-Rt™-Msieve 5A Column is designed for efficient separation of Ar/O₂ and other permanent gases, including CO. Special coating and deactivation procedures ensure chromatographic efficiency and the integrity of the porous layer coating. Molecular sieves have very high retention, allowing separations of permanent gases at temperatures above ambient. This deactivation technology also allows CO to elute as a sharp peak. Additionally, the unique immobilization process guarantees that the uniform particles remain adhered to the tubing—even after continuous valve-cycling.

SH-Rt™-Msieve 5A Column separates Ar/O₂ and H₂/He at ambient temperature. This column also is an excellent choice for rapid separation of permanent gases in refinery or natural gas.

ID	df	Temp. limits	30-Meter
0.53 mm	50 µm	to 300 °C	221-75763-30

SH-Rt™-Q-BOND Columns

100% divinylbenzene

The process used to manufacture porous polymer PLOT columns causes the particles to adhere strongly to the walls of the tubing, so there is virtually no particle generation. You get reproducible performance from column to column, including selectivity and flow.

These porous polymer PLOT columns are not moisture sensitive, making them ideal for applications where moisture is of major concern.

- Nonpolar PLOT column incorporating 100% divinylbenzene.
- Excellent for analysis of C1 to C3 isomers and alkanes up to C12.
- High retention for CO₂ simplifies gas analysis; CO₂ and methane separated from O₂/N₂/CO (Note: O₂/N₂/CO not separated at room temperature).
- Use for analysis of oxygenated compounds and solvents.
- Maximum temperature of 300 °C.

ID	df	Temp. limits	30-Meter
0.32 mm	10 µm	to 280/300 °C	221-75764-30
0.53 mm	20 µm	to 280/300 °C	221-75765-30

Stainless Steel (Siltek™)

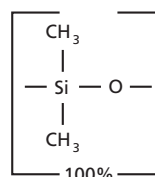
SH-MXT™-1 Column

nonpolar phase; Crossbond™ dimethyl polysiloxane

- General-purpose column for solvent impurities, PCB congeners (e.g., Aroclor mixes), gases, natural gas odorants, sulfur compounds, essential oils, hydrocarbons, semivolatiles, pesticides, and oxygenates.
- Temperature range: -60 °C to 430 °C.
- Equivalent to USP G1, G2, G38 phases.

SH-MXT™-1 columns exhibit long lifetime and very low bleed at high operating temperatures. A proprietary synthesis process eliminates residual catalysts that could cause degradation and increase bleed.

SH-MXT™-1 Structure



ID	df	Temp. limits	15-Meter
0.28 mm	0.10 μm	-60 to 360/430 °C	221-75734-15

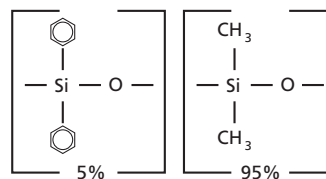
SH-MXT™-5 Column

low polarity phase; Crossbond™ diphenyl dimethyl polysiloxane

- General-purpose column for drugs, solvent impurities, pesticides, hydrocarbons, PCB congeners (e.g., Aroclor mixes), essential oils, and semivolatiles.
- Temperature range: -60 °C to 430 °C.
- Equivalent to USP G27, G36 phases.

The diphenyl dimethyl polysiloxane stationary phase is the most popular GC stationary phase and is used in a wide variety of applications. All residual catalysts and low molecular weight fragments are removed from the SH-MXT™-5 polymer, providing a tight monomodal distribution and extremely low bleed.

SH-MXT™-5 Structure



ID	df	Temp. limits	30-Meter
0.25 mm	0.25 μm	-60 to 360/430 °C	221-75743-30

Specific Use

Acidic Compounds Analysis

SH-Stabilwax™-DA Column (fused silica)

polar phase; Crossbond™ acid-deactivated Carbowax™ polyethylene glycol—for acidic compounds

- Application-specific columns for free (underivatized) acids, some inorganic acids.
- Resistant to oxidative damage.
- Temperature range: 40 °C to 260 °C.
- Equivalent to USP G25, G35 phases.

please note

SH-Stabilwax™-DA columns should not be rinsed with water.

SH-Stabilwax™-DA bonded polyethylene glycol has an acidic functionality incorporated into the polymer structure. This permits analysis of acidic compounds without derivatization, significantly reduces adsorption of acids, and increases sample capacity for volatile free acids. SH-Stabilwax™-DA columns last longer and give better peak shapes for high molecular weight acids.

Some inorganic acids also chromatograph well on a SH-Stabilwax™-DA column; the limitation is the volatility of the acidic compound.

ID	df	Temp. limits	30-Meter
0.25 mm	0.25 µm	40 to 250/260 °C	221-75981-30

Blood Alcohol Analysis

SH-Rtx™-BAC1 Column (fused silica)

Crossbond™

- Application-specific columns for blood alcohol analysis achieve baseline resolution in less than 3 minutes. Also excellent for abused inhalant anesthetics, γ -hydroxybutyrate (GHB)/ γ -butyrolactone (GBL), glycols, and common industrial solvents.

ID	df	Temp. limits	100-Meter
0.32 mm	1.80 µm	-20 to 240/260 °C	221-76135-30

Pesticides Analysis –Organophosphorus–

SH-Rtx™-OPPesticides2 Column (fused silica)

proprietary Crossbond™ phases

- Application-specific column for organophosphorus pesticides; best column combination for U.S. EPA Method 8141A.
- Low bleed—ideal for GC-FPD, GC-NPD, or GC-MS analyses.
- Stable to 330 °C.

Using sophisticated computer modeling software, we created two stationary phases for separating the 53 organophosphorus pesticides (OPP) listed in EPA Method 8141A. Separation is improved and analysis time is significantly reduced compared to other columns. The extended upper temperature limit of these phases (330 °C) allows analysts to bake out high molecular weight contamination typically associated with pesticide samples. The low-bleed column is a perfect match for sensitive detection systems.

ID	df	Temp. limits	30-Meter
0.32 mm	0.32 µm	-20 to 310/330 °C	221-75887-30

–Chlorinated–

SH-Rtx™-CLPesticides Column (fused silica)

proprietary Crossbond™ phases

- Application-specific column for organochlorine pesticides and herbicides.
- Low bleed—ideal for GC-ECD or GC-MS analyses.
- Baseline separations in less than 10 minutes.
- Stable to 340 °C.
- Analyze EPA Method 8081B, 8082A, 8151A, 504.1, 515, 508.1, and 552.2 compounds without time-consuming column change.

ID	df	Temp. limits	30-Meter
0.32 mm	0.50 µm	-20 to 320/340 °C	221-75879-30

Guard Column

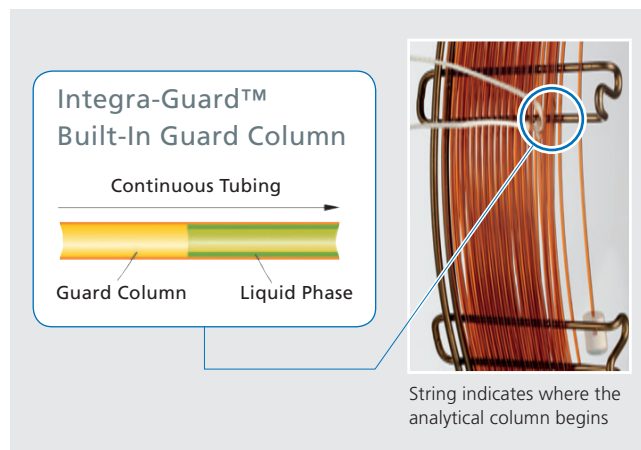
Innovative Integra-Guard™ Columns

Get the protection without the connection!

- No leaks for a more robust method.
- No column connections for easier, faster maintenance.
- No peak distortions due to connector dead volume and thermal capacity.

For analysts who find it inconvenient to make a leak-free connection between the guard column and the analytical column, Integra-Guard™ columns are recommended. These innovative columns incorporate both guard column and analytical column in a continuous length of tubing, eliminating the connection and all connection-associated problems! The guard column section is marked separately from the analytical column, using high-temperature string.

A wide variety of our Integra-Guard™ capillary columns are listed here. The Integra-Guard™ column is so economical that we challenge you to compare our price against that of a conventional connection, even if you assemble it yourself. If you are currently using a guard column, or are considering using one, call today and ask about Integra-Guard™ columns.



Description	Qty.	P/N
SH-Rtx-1™		
30 m, 0.25 mm ID, 0.25 µm SH-Rtx-1™ w/5 m Integra-Guard™ Column	ea.	221-75719-31
30 m, 0.53 mm ID, 1.00 µm SH-Rtx-1™ w/5 m Integra-Guard™ Column	ea.	221-75731-31
30 m, 0.53 mm ID, 5.00 µm SH-Rtx-1™ w/5 m Integra-Guard™ Column	ea.	221-75734-31
SH-Rtx-5™		
30 m, 0.25 mm ID, 0.25 µm SH-Rtx-5™ w/5 m Integra-Guard™ Column	ea.	221-76153-05
30 m, 0.25 mm ID, 0.25 µm SH-Rtx-5™ w/10 m Integra-Guard™ Column	ea.	221-76153-30
30 m, 0.25 mm ID, 1.00 µm SH-Rtx-5™ w/5 m Integra-Guard™ Column	ea.	221-76179-30
30 m, 0.32 mm ID, 0.25 µm SH-Rtx-5™ w/5 m Integra-Guard™ Column	ea.	221-76177-30
30 m, 0.32 mm ID, 1.00 µm SH-Rtx-5™ w/5 m Integra-Guard™ Column	ea.	221-76180-30
30 m, 0.53 mm ID, 5.00 µm SH-Rtx-5™/Rtx-G27™ w/5 m Integra-Guard™ Column	ea.	221-76154-35
60 m, 0.32 mm ID, 0.25 µm SH-Rtx-5™ w/5 m Integra-Guard™ Column	ea.	221-76177-60
SH-Rtx-5MS™		
15 m, 0.25 mm ID, 0.25 µm SH-Rtx-5MS™ w/5 m Integra-Guard™ Column	ea.	221-75861-15
30 m, 0.25 mm ID, 0.10 µm SH-Rtx-5MS™ w/5 m Integra-Guard™ Column	ea.	221-76189-30
30 m, 0.25 mm ID, 0.25 µm SH-Rtx-5MS™ w/5 m Integra-Guard™ Column	ea.	221-75861-05
30 m, 0.25 mm ID, 0.25 µm SH-Rtx-5MS™ w/10 m Integra-Guard™ Column	ea.	221-75861-10
30 m, 0.32 mm ID, 0.25 µm SH-Rtx-5MS™ w/5 m Integra-Guard™ Column	ea.	221-76190-30
SH-Rxi-5Sil MS™		
30 m, 0.25 mm ID, 0.25 µm SH-Rxi-5Sil MS™ MS w/5 m Integra-Guard™ Column	ea.	221-76161-30
30 m, 0.25 mm ID, 0.25 µm SH-Rxi-5Sil MS™ MS w/10 m Integra-Guard™ Column	ea.	221-76162-30
SH-Rtx-624™		
30 m, 0.25 mm ID, 1.40 µm SH-Rtx-624™ w/5 m Integra-Guard™ Column	ea.	221-76183-30
30 m, 0.32 mm ID, 1.80 µm SH-Rtx-624™ w/5 m Integra-Guard™ Column	ea.	221-76157-35
30 m, 0.53 mm ID, 3.00 µm SH-Rtx-624™ w/5 m Integra-Guard™ Column	ea.	221-76158-30
SH-Rtx-1301™		
30 m, 0.53 mm ID, 3.00 µm SH-Rtx-1301™ w/5 m Integra-Guard™ Column	ea.	221-76164-35
SH-Rtx-1701™		
30 m, 0.25 mm ID, 0.25 µm SH-Rtx-1701™ w/5 m Integra-Guard™ Column	ea.	221-76185-30



Shimadzu Corporation
www.shimadzu.com/an/

Company names, product/service names and logos used in this publication are trademarks and trade names of Shimadzu Corporation or its affiliates, whether or not they are used with trademark symbol "TM" or "®". Third-party trademarks and trade names may be used in this publication to refer to either the entities or their products/services. Shimadzu disclaims any proprietary interest in trademarks and trade names other than its own.

For Research Use Only. Not for use in diagnostic procedures.
The contents of this publication are provided to you "as is" without warranty of any kind, and are subject to change without notice. Shimadzu does not assume any responsibility or liability for any damage, whether direct or indirect, relating to the use of this publication.