



Gas Chromatography

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Capillary GC Equity Columns



The performance you demand..
the service you deserve..
from the company you trust.

Supelco's new and improved line of capillary GC columns deliver the capillary GC column performance you demand for your general purpose, special purpose GC/MS, or environmental applications.

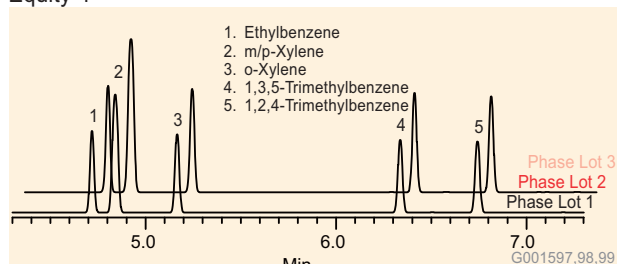
Significant improvements in the polymer chemistry are at the heart of the enhanced performance you will receive with our new Equity Capillary GC Columns. The polymer improvements result in better cross-linking, higher thermal stability, and superior product reproducibility.

The consistent resolution, analyte response, low bleed, and column life from one Equity column to the next will allow you to re-transfer methods between sites or instruments within the same site. Also, maintain the expected column performance over time with the same instrument when you need to replace your column. The reproducible performance Equity provides will minimize time consuming method adjustments and troubleshooting with column changes which means more tests run with higher confidence.

The Resolution You Need

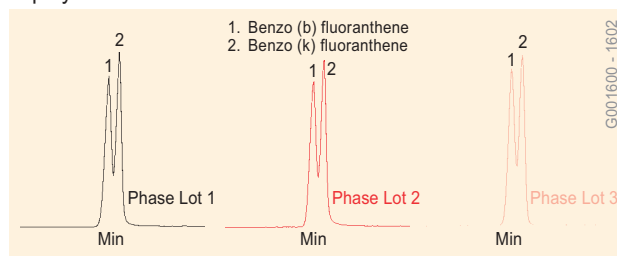
For accurate identification, reliable quantitation, and confidence in your results choose Equity Capillary GC Columns. The consistently high resolution you demand and the service you deserve.

Equity-1



Column: 30m x 0.25mm ID, 0.25 μ m
Cat. No.: 28046-U
Oven: 50°C to 200°C @ 10°C/min. (5 min.)
Inj.: 200°C
Det.: FID, 250°C
Flow: 30cm/sec. @ 50°C
Injection: 1.0 μ L, 100:1 split
Sample: UST Modified Gasoline Range Organics (48167)

Equity-5

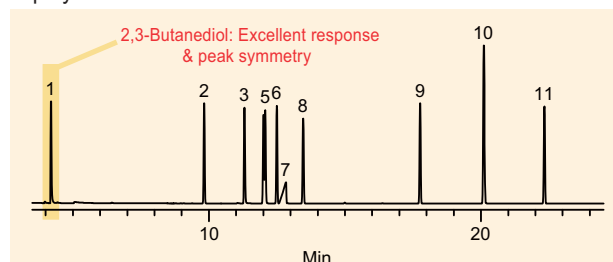


Column: 30m x 0.25mm ID, 0.25 μ m
Cat. No.: 28089-U
Oven: 40°C (4 min.) to 325°C @ 10°C/min (5 min.)
Inj.: 250°C
MSD Interface: 325°C
Scan Range: 45-450 amu
Flow: 12.5psi constant pressure
Injection: 1.0 μ L, splitless
Sample: 25ng on-column of a 16 component semivolatle standard

The Analyte Response You Require

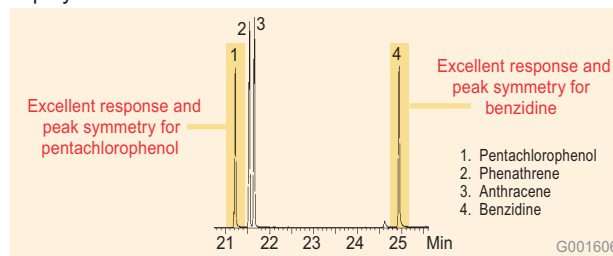
For lower detection limits and less instrument downtime, you can depend on Equity Capillary GC Columns. The reproducible analyte response you demand and the service you deserve.

Equity-1



Column: 30m x 0.25mm ID, 0.25 μ m
Cat. No.: 28046-U
Oven: 110°C (14 min.) to 325°C (15 min) @ 15°C/min.
Inj.: 250°C
Det.: FID, 360°C
Flow: 30cm/sec. @ 110°C
Injection: 1.0 μ L, 100:1 split
Sample: Nonpolar Column Test Mix (47300-U)
% Response: Calculated relative to the predicted hydrocarbon response at the same retention time

Equity-5

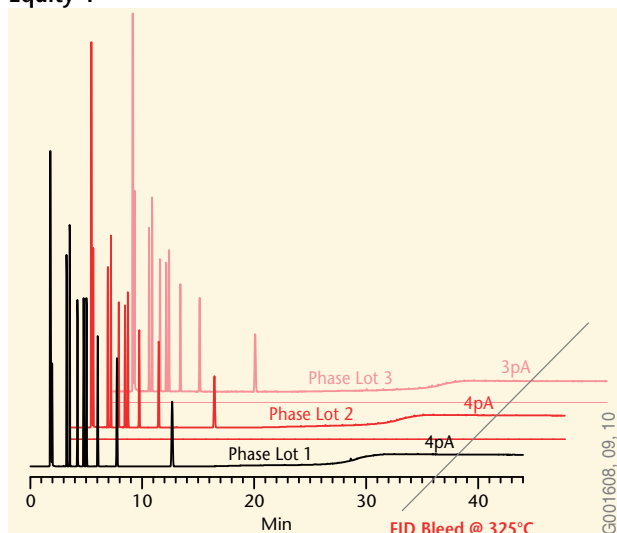


Column: 30m x 0.25mm ID, 0.25 μ m
Cat. No.: 28089-U
Oven: 40°C (4 min.) to 325°C @ 10°C/min. (5 min.)
Inj.: 250°C
MSD Interface: 325°C
Scan Range: 45-450 amu
Flow: 12.5psi constant pressure
Injection: 1.0 μ L, splitless
Sample: 25ng on-column of a 16 component semivolatle standard

The Low Bleed You Expect

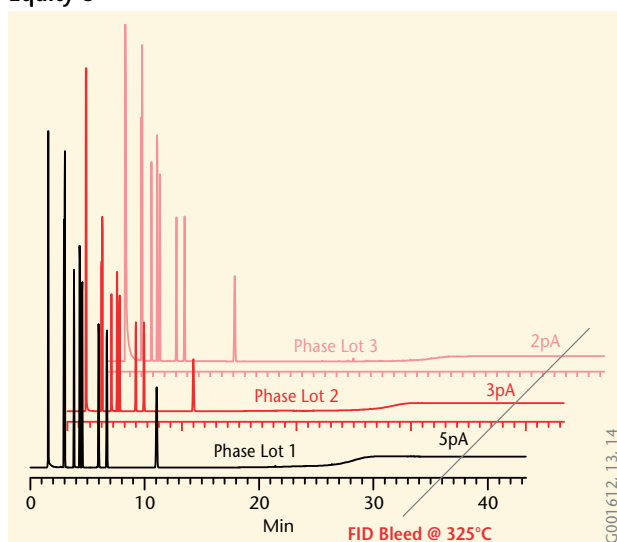
For great sensitivity, reliable identification, and increased sample throughput rely on Equity Capillary GC Columns. The consistent low bleed performance you demand and the service you deserve.

Equity-1



Column: 30m x 0.25mm ID, 0.25 μ m
Cat. No.: 28089-U
Oven: 110°C (14 min.) to 325°C (15 min) @ 15°C/min.
Inj.: 250°C
Det.: FID, 360°C
Flow: 30cm/sec. @ 110°C
Injection: 1.0 μ L, 100:1 split
Sample: Nonpolar Column Test Mix (47300-U)

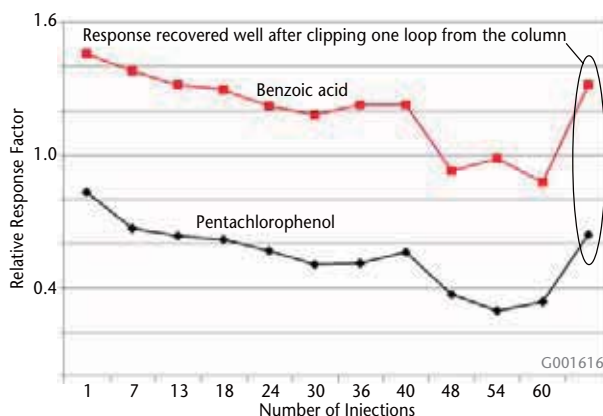
Equity-5



Column: 30m x 0.25mm ID, 0.25 μ m
Cat. No.: 28089-U
Oven: 110°C (14 min.) to 325°C (15 min) @ 15°C/min.
Inj.: 250°C
Det.: FID, 360°C
Flow: 30cm/sec. @ 110°C
Injection: 1.0 μ L, 100:1 split
Sample: Nonpolar Column Test Mix (47300-U)

The Column Life You Count On

To increase your productivity and reduce your instrument downtime, use Equity Capillary GC Columns. The durable, consistent column life you demand and the service you deserve.



Durability Challenge

Column: 30m x 0.25mm ID, 0.25 μ m
Oven: 35°C (4 min.) to 325°C @ 10°C/min. (15 min.)
Inj.: 250°C
Det.: FID, 360°C
Flow: 27psi constant pressure
Injection: 1.0 μ L, 100:1 split of test mix
Sample: Test Mix – 2.5 to 5ng on-column of a 16 component semivolatile standard; the column challenge mix is a high concentration waste sample.

Response factor is calculated relative to the internal standard 2,2'-Difluorobiphenyl

Durability Test:

The column durability and life was challenged for over 60 injections by alternating injections of the 1 μ L test mix followed by 5 consecutive 2 μ L splitless injections of the high concentration waste sample. Column maintenance was performed at the end of the test and a final test mix was injected.

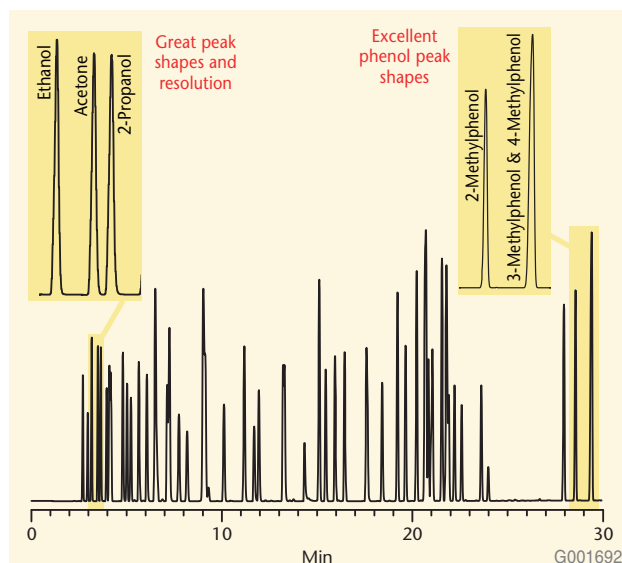
Supelco plans to add more phases and dimensions to the Equity line of capillary GC columns.

Our original nonpolar capillary GC columns are still available and are located on the "Other Columns" pages following the Capillary GC section.

RELATED INFORMATION

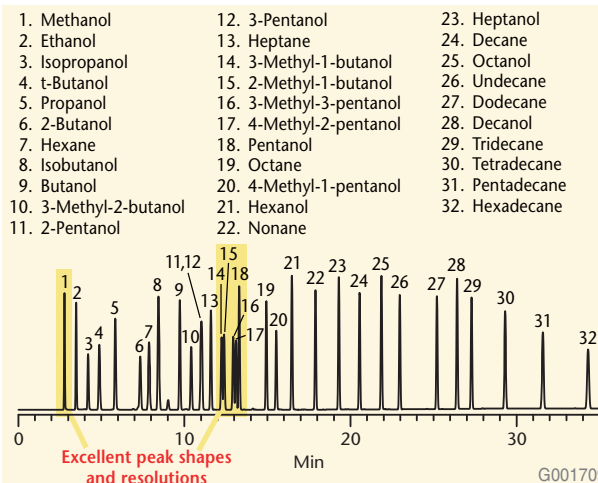
For more information on the Equity line of capillary GC columns request T402049.

Capillary GC Equity-1 Columns



Industrial Solvents (GC)

Column: Equity-1, 30m x 0.32mm ID, 1.0 μ m
 Cat. No.: 28057-U
 Oven: 35°C (8 min) to 130°C @ 4°C/min. (2 min)
 Inj.: 250°C
 Det.: FID, 250°C
 Flow: Helium, 25cm/sec constant @ 35°C
 Inj.: 0.5 μ L, split (200:1)
 Liner: Split, cup design
 Sample: 0.5 μ L of a 59 component neat solvent mixture



Hydrocarbons and Alcohols (GC)

Column: Equity-1, 30m x 0.53mm ID, 3.0 μ m
 Cat. No.: 28076-U
 Oven: 40°C (5 min.) to 225°C @ 8°C/min.
 Inj.: 250°C
 Det.: FID, 275°C
 Flow: Helium, 30 cm/sec @ 40°C
 Inj.: 0.10 μ L, split 100:1
 Liner: Split, cup design
 Sample: 32 component mixed solvent sample, equal by weight

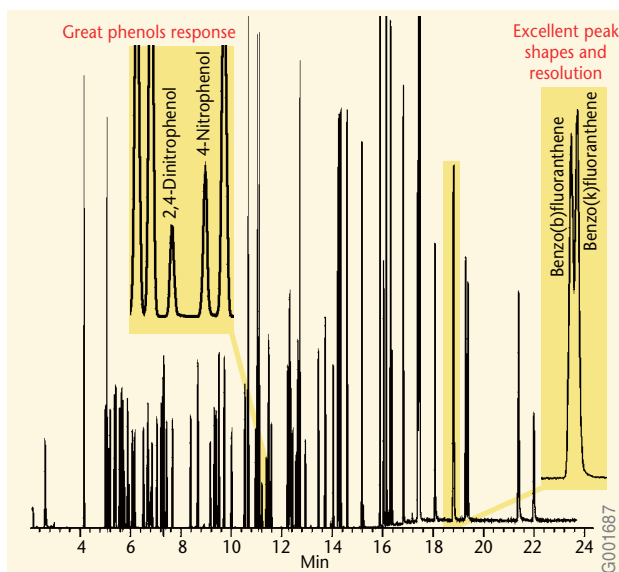
Equity-1 Capillary GC Columns



Phase: bonded; poly(dimethylsiloxane)
 Temp. Limits: 0.25 and 0.32mm ID: -60°C to 325/350°C
 0.53mm ID: -60°C to 300/320°C ($\leq 1.5\mu$ m d_i)
 -60°C to 260/280°C ($> 1.5\mu$ m d_i)

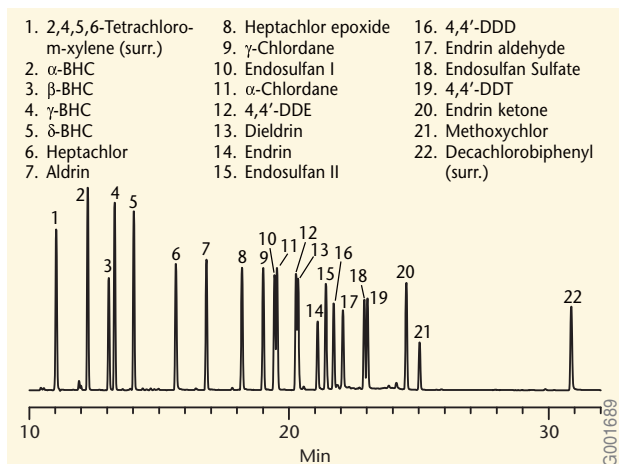
LENGTH (m)	D _i (μ m)	BETA	CAT. NO.	PRICE
0.10mm ID				
15	0.10	250	28039-U	
0.20mm ID				
12	0.33	152	28041-U	
25	0.33	152	28042-U	
10	1.2	42	28043-U	
0.25mm ID				
30	0.10	625	28044-U	
15	0.25	250	28045-U	
30	0.25	250	28046-U	
60	0.25	250	28047-U	
15	1.0	63	28048-U	
30	1.0	63	28049-U	
60	1.0	63	28050-U	
100	1.0	63	28052-U	
0.32mm ID				
30	0.10	800	28053-U	
15	0.25	320	28054-U	
30	0.25	320	28055-U	
60	0.25	320	28056-U	
30	1.0	80	28057-U	
60	1.0	80	28058-U	
100	1.0	80	28060-U	
30	2.0	40	28061-U	
30	5.0	16	28062-U	
60	5.0	16	28063-U	
0.53mm ID				
15	0.10	1325	28064-U	
30	0.10	1325	28065-U	
15	0.5	265	28067-U	
30	0.5	265	28068-U	
15	1.0	133	28069-U	
30	1.0	133	28071-U	
15	1.5	88	28072-U	
30	1.5	88	28073-U	
60	1.5	88	28074-U	
15	3.0	44	28075-U	
30	3.0	44	28076-U	
60	3.0	44	28077-U	
15	5.0	27	28079-U	
30	5.0	27	28081-U	
60	5.0	27	28082-U	

Capillary GC Equity-5 Columns



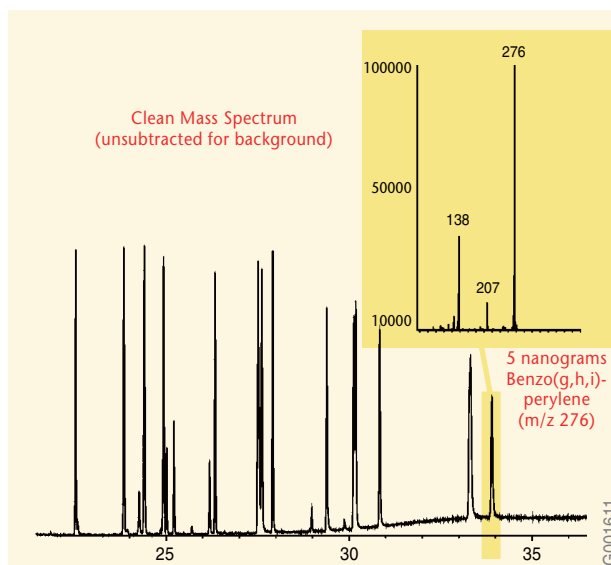
US EPA Method 8270 Semivolatile Compounds (GC/MS)

Column: Equity-5, 30m x 0.25mm ID, 0.5 μ m
Cat. No.: 28092-U
Oven: 40°C (2 min) to 100°C @ 50°C/min to 200°C @ 10°C/min to 325°C @ 30°C/min (7.5 min)
Inj.: 280°C
Det.: 5973 MSD, Scan range 45-450 amu, 325°C transfer line
Flow: Pressure programmed, 20psi (0.0 min.), ramp to 80psi (0.0 min), ramp to 16.5psi (3 min), ramp to 25psi (hold for remainder of run)
Injection: 1.0 μ L, splitless (0.61 min)
Liner: Single taper, unpacked
Sample: 50ng on-column of a 74 component semivolatile standard, 6 internal standards, and 8 surrogates



US EPA Method 8081 Chlorinated Pesticides (GC)

Column: Equity-5, 30m x 0.25mm ID, 0.25 μ m
Cat. No.: 28089-U
Oven: 100°C (2 min) to 160°C @ 15°C/min to 300°C @ 5°C/min (10 min)
Inj.: 225°C
Det.: ECD, 310°C
Flow: Helium, 30cm/sec @ 100°C
Injection: 2.0 μ L, splitless (0.5 min)
Liner: Splitless double taper, unpacked
Sample: 50ppb of a 22 component chlorinated pesticide standard (Cat. No. 46845-U)



Low GC/MS Column Bleed

Equity-5 Capillary GC Columns

Phase: bonded; poly(5% diphenyl/95% dimethylsiloxane)

Temp. Limits: 0.25 and 0.32mm ID: -60°C to 325/350°C
 0.53mm ID: -60°C to 300/320°C ($\leq 1.5\mu$ m d_i)
 -60°C to 260/280°C ($> 1.5\mu$ m d_i)

LENGTH (m)	D _f (μ m)	BETA	CAT. NO.	PRICE
0.10mm ID				
15	0.10	250	28083-U	
0.20mm ID				
15	0.20	250	28084-U	
30	0.20	250	28085-U	
60	0.20	250	28086-U	
12	0.33	152	28087-U	
0.25mm ID				
15	0.25	250	28088-U	
30	0.25	250	28089-U	
60	0.25	250	28090-U	
30	0.5	125	28092-U	
15	1.0	63	28093-U	
30	1.0	63	28094-U	
60	1.0	63	28095-U	
0.32mm ID				
15	0.25	320	28096-U	
30	0.25	320	28097-U	
60	0.25	320	28098-U	
30	0.32	250	28099-U	
30	0.5	160	28195-U	
30	1.0	80	28199-U	
60	1.0	80	28251-U	
0.53mm ID				
15	0.5	265	28252-U	
30	0.5	265	28259-U	
60	0.5	265	28263-U	
30	1.0	133	28264-U	
15	1.5	88	28265-U	
30	1.5	88	28267-U	
30	3.0	44	28268-U	
60	3.0	44	28269-U	
15	5.0	27	28278-U	
30	5.0	27	28279-U	
60	5.0	27	28293-U	

Order: 1.800.325.3010 Technical Service: 1.800.359.3041 Web: www.sigma-aldrich.com/supelco

Gas
Chromatography

SUPELCO

Capillary GC General Purpose Columns

SPB-Octyl

Polarity approaches that of squalane, and is substantially less than that of the widely used "nonpolar" methyl silicone phase. Because these columns offer unique selectivity compared to the commonly used low and intermediate polarity columns, we recommend SPB-Octyl columns for multidimensional or confirmational analyses of PCB-containing samples.

Operating Conditions: Chemically compatible with water and other injection solvents. Sensitive to strong inorganic acids and bases. Columns can be rinsed.

Phase: bonded; poly(50% n-octyl/ 50% methylsiloxane)
Temp. Limits: -60°C to 280°C (isothermal)
McReynolds Nos.: x' y' z' u' s' = 3 14 11 12 11

LENGTH (m)	D _f (μm)	BETA	CAT. NO.	PRICE
0.25mm ID FUSED SILICA				
30	0.25	250	24218-U	
60	0.25	250	24219-U	
30	1.00	63	24232	
60	1.00	63	24233-U	
0.53mm ID FUSED SILICA				
60	3.0	44	25398	

SPB-20

SPB-20 columns have intermediate polarity as a result of the higher (20%) phenyl content of the stationary phase. The higher polarity produces different elution order for polar compounds, providing confirmational information.

This column meets USP G28 and G32 requirements

Operating Conditions: Chemically compatible with water and other injection solvents. Sensitive to strong inorganic acids and bases. Columns can be rinsed.

Phase: bonded; poly(20% diphenyl/ 80% dimethylsiloxane)
Temp. Limits: -25°C to 300°C
McReynolds Nos.: x' y' z' u' s' = 67 116 117 174 131

LENGTH (m)	D _f (μm)	BETA	CAT. NO.	PRICE
0.25mm ID FUSED SILICA				
30	0.2	250	24086	
60	0.25	250	24087-U	
30	1.0	63	24196-U	
0.32mm ID FUSED SILICA				
30	0.25	320	24088	
60	1.0	80	24194-U	
0.53mm ID FUSED SILICA				
30	0.50	265	25329-U	
30	1.0	133	25333	

SPB-35

SPB-35 columns have higher polarity than SPB-20 columns as a result of a greater phenyl content (35%). These columns are useful for analyses of polar compounds, because these compounds are retained longer, relative to nonpolar compounds.

This column meets USP G42 requirements.

Operating Conditions: Chemically compatible with water and other injection solvents. Sensitive to strong inorganic acids and bases. Columns can be rinsed.

Phase: bonded; poly(35% diphenyl/ 65% dimethylsiloxane)
Temp. Limits: 0°C to 300°C
McReynolds Nos.: x' y' z' u' s' = 101 146 151 219 202

LENGTH (m)	D _f (μm)	BETA	CAT. NO.	PRICE
0.25mm ID FUSED SILICA				
30	0.25	250	24092	
0.32mm ID FUSED SILICA				
30	0.25	320	24094	
0.53mm ID FUSED SILICA				
30	0.50	265	25331	
30	1.0	133	25335	

SPB-50

These columns have the highest phenyl content of the common phenyl-containing series of phases, and hence provide the highest polarizability. They are useful for analyses of polar materials and provide useful confirmational information.

This column meets USP G3 requirements.

Operating Conditions: Chemically compatible with water and other injection solvents. Sensitive to strong inorganic acids and bases. Columns can be rinsed.

Phase: bonded; poly(50% diphenyl/ 50% dimethylsiloxane)
Temp. Limits: 30°C to 310°C
McReynolds Nos.: x' y' z' u' s' = 125 175 183 268 220

LENGTH (m)	D _f (μm)	BETA	CAT. NO.	PRICE
0.25mm ID FUSED SILICA				
30	0.25	250	24181	
0.32mm ID FUSED SILICA				
30	0.25	320	24187	
0.53mm ID FUSED SILICA				
30	0.50	265	25363	

Order: 1.800.325.3010 Technical Service: 1.800.359.3041 Web: www.sigma-aldrich.com/supelco

SP-2250

The nonbonded 50% phenyl polymer that is matched in polarity by the bonded version, SPB-50.

This column meets USP G3 requirements.

Phase: nonbonded; poly(50% phenyl/
50% methylsiloxane)

Temp. Limits: 0°C to 250°C

McReynolds Nos.: x' y' z' u' s' = 119 158 162 243 202

LENGTH (m)	D _f (μm)	BETA	CAT. NO.	PRICE
0.25mm ID FUSED SILICA				
15	0.20	313	24009	
30	0.20	313	24010	
60	0.20	313	24011-U	
0.32mm ID FUSED SILICA				
15	0.20	320	24147	
30	0.20	320	24148	

SPB-17

This bonded, crosslinked (50%-phenyl)-methylpolysiloxane, intermediate polarity phase is excellent for confirmational analyses.

This column meets USP G3 requirements.

Operating Conditions: Columns can be rinsed.

Phase: bonded; (50% phenyl) methylpolysiloxane

Temp. Limits: 0.25 and 0.32mm ID:
40°C to 280/300°C

0.53mm ID: 40°C to 260/280°C

McReynolds Nos.: x' y' z' u' s' = 125 169 174 253 207

LENGTH (m)	D _f (μm)	BETA	CAT. NO.	PRICE
0.25mm ID FUSED SILICA				
15	0.25	250	24374-U	
30	0.25	250	24380-U	
0.32mm ID FUSED SILICA				
30	0.25	320	24381	
30	0.50	160	24376	
0.53mm ID FUSED SILICA				
15	1.0	250	25472	

SPB-1701

Intermediate polarity SPB-1701 columns have a mixed functionality which provides unique elution order characteristics, relative to the phenyl-containing silicone phases.

This column meets USP G46 requirements.

Phase: bonded; poly(14% cyanopropylphenyl/
86% dimethylsiloxane)

Temp. Limits: subambient to 280°C

McReynolds Nos.: x' y' z' u' s' = 67 170 153 228 171

LENGTH (m)	D _f (μm)	BETA	CAT. NO.	PRICE
0.25mm ID FUSED SILICA				
15	0.25	250	24112	
30	0.25	250	24113	
60	0.25	250	24114	
0.32mm ID FUSED SILICA				
30	0.25	320	24184	
60	0.25	320	24185	
0.53mm ID FUSED SILICA				
15	0.50	265	25368	
30	0.50	265	25369	
15	1.0	133	25366	
30	1.0	133	25367	

PAG

Less polar than polyethylene glycol phases, due to the incorporation of propylene oxide into the polymer backbone. Fills the polarity gap between 50% phenyl columns and Carbowax-type columns (polarity similar to UCON and Pluronic phases).

This column meets USP G18 requirements.

Operating Conditions: Chemically compatible with water and other injection solvents, but solvents such as water and methanol must be vaporized before reaching the column inlet. Avoid these solvents when using on-column injection techniques. Sensitive to strong inorganic acids. Columns can be rinsed.

Phase: bonded; poly(alkylene glycol)

Temp. Limits: 30°C to 220°C

McReynolds Nos.: x' y' z' u' s' = 252 499 310 489 416

LENGTH (m)	D _f (μm)	BETA	CAT. NO.	PRICE
0.25mm ID FUSED SILICA				
15	0.25	250	24222-U	
30	0.25	250	24223	
0.32mm ID FUSED SILICA				
15	0.25	320	24225-U	
30	0.25	320	24226	
0.53mm ID FUSED SILICA				
15	0.50	265	25422-U	
30	0.50	265	25423-U	
60	0.50	265	25424	

Capillary GC General Purpose Columns

SUPELLOWAX 10

The bonded equivalent to the CARBOWAX 20M phase, with much higher thermal stability. Because this phase offers higher polarity than any of the phenylsilicone phases, it is widely used for separation and purity analyses of many polar compounds, including alcohols, aromatics, and other solvents, flavors, fragrances and FAMES.

This column meets USP G16 requirements.

Operating Conditions: Chemically compatible with water and other injection solvents, but solvents such as water and methanol must be vaporized before reaching the column inlet. Avoid these solvents when using on-column injection techniques. Sensitive to strong inorganic acids. Columns can be rinsed.

Phase: bonded; CARBOWAX 20M
poly (ethylene glycol)
Temp. Limits: 35°C to 280°C
McReynolds Nos.: x' y' z' u' s' = 305 551 360 562 484

LENGTH (m)	D _f (μm)	BETA	CAT. NO.	PRICE
0.10mm ID FUSED SILICA				
5	0.10	250	25025-U	
10	0.10	250	25026-U	
15	0.10	250	24343	
0.20mm ID FUSED SILICA				
30	0.20	250	24169	
60	0.20	250	24170	
0.25mm ID FUSED SILICA				
15	0.25	250	24077	
30	0.25	250	24079	
60	0.25	250	24081	
30	0.50	125	24284	
0.32mm ID FUSED SILICA				
15	0.25	320	24078	
30	0.25	320	24080-U	
60	0.25	320	24082	
15	0.50	160	24083	
30	0.50	160	24084	
60	0.50	160	24085-U	
30	1.0	80	24211	
60	1.0	80	24212	
0.53mm ID FUSED SILICA				
15	0.50	265	25324	
30	0.50	265	25325	
60	0.50	265	25385	
15	1.0	133	25300-U	
30	1.0	133	25301-U	
60	1.0	133	25391	
30	2.0	63	25375-U	
60	2.0	63	25376	

SPB-1000

An improved version of our Nukol phase, SPB-1000 is a bonded, PEG-type phase incorporating acidic functional groups and displaying a polarity closer to the SP-1000 phase than does Nukol. It displays the acidic character necessary for analyses of volatile acidic compounds. It also offers improved performance for analyses of glycols, compared to the Nukol phase. It is the recommended column for ethylene glycol analysis.

This column meets USP G25 and G35 requirements.

Operating Conditions: Columns can be rinsed.

Phase: bonded; modified poly(ethylene glycol)
Temp. Limits: 60°C to 200°C
McReynolds Nos.: x' y' z' u' s' = 308 565 368 567 511

LENGTH (m)	D _f (μm)	BETA	CAT. NO.	PRICE
0.25mm ID FUSED SILICA				
30	0.25	250	24313	
0.32mm ID FUSED SILICA				
30	0.25	320	24315	
0.53mm ID FUSED SILICA				
30	0.50	265	25445	

Nukol (Bonded Free Fatty Acid Phase)

This bonded PEG-type phase, incorporating acidic functional groups, displays an acidic character and is useful for analyses of volatile acidic compounds. Even free carboxylic acids can be analyzed with excellent peak shape and minimal adsorption.

This column meets USP G25 and G35 requirements.

Operating Conditions: Sensitive to strong inorganic acids. Columns can be rinsed.

Phase: bonded; modified poly(ethylene glycol)
Temp. Limits: 60°C to 200°C
McReynolds Nos.: x' y' z' u' s' = 314 569 372 578 504

LENGTH (m)	D _f (μm)	BETA	CAT. NO.	PRICE
0.25mm ID FUSED SILICA				
15	0.25	250	24106-U	
30	0.25	250	24107	
60	0.25	250	24108	
0.32mm ID FUSED SILICA				
15	0.25	320	24130	
30	0.25	320	24131	
60	0.25	320	24132	
15	1.0	80	24206-U	
30	1.0	80	24207	
60	1.0	80	24208	
0.53mm ID FUSED SILICA				
15	0.50	265	25326	
30	0.50	265	25327	
60	0.50	265	25386	

Capillary GC General Purpose Columns

215

SPB-225

This bonded, crosslinked (50% cyanopropylphenyl) methylpolysiloxane, intermediate-high polarity phase is excellent for separations of cis and trans FAMES.

This column meets USP G7 and G19 requirements.

Operating Conditions: Columns can be rinsed.

Phase: bonded; (50% cyanopropylphenyl) methylpolysiloxane

Temp. Limits: 45°C to 220/240°C

LENGTH (m)	D _f (μm)	BETA	CAT. NO.	PRICE
0.25mm ID FUSED SILICA				
30	0.15	417	24334	
30	0.25	250	24335	
0.32mm ID FUSED SILICA				
30	0.15	533	24336	
30	0.25	320	24337	

SP-2330

Substitution of the bis-cyanopropyl and phenyl groups on the polymer backbone provides the phase with both polar and polarizable characteristics. These columns (and all high cyanopropyl-substituted polymers) are useful for both high and low temperature separations of samples such as geometric isomers of fatty acid methyl esters, dioxins, and aromatic compounds.

This column meets USP G8 requirements.

Operating Conditions: More susceptible to damage by oxygen, moisture, and HCl than other silicone phases. Avoid solvents such as water and methanol when using on-column injection techniques. Columns should not be rinsed.

Phase: nonbonded; poly(80% biscyanopropyl/20% cyanopropylphenyl siloxane)

Temp. Limits: subambient to 250°C

McReynolds Nos.: x' y' z' u' s' = 382 610 506 710 591

LENGTH (m)	D _f (μm)	BETA	CAT. NO.	PRICE
0.25mm ID FUSED SILICA				
15	0.20	313	24018	
30	0.20	313	24019	
60	0.20	313	24020-U	
0.32mm ID FUSED SILICA				
15	0.20	320	24102-U	
30	0.20	320	24073	
60	0.20	320	24074	

SP-2380

Between the traditional nonbonded cyanosilicone phases SP-2330 and SP-2340 in polarity. The high polarity of this phase allows the separation of geometric (cis/trans) fatty acid methyl ester isomers as a group. Stabilized phase with a maximum temperature slightly higher than SP-2330 or SP-2340. Significantly more stable than SP-2330.

This column meets USP G48 requirements.

Operating Conditions: More susceptible to damage by oxygen, moisture, and HCl than other silicone phases. Avoid solvents such as water and methanol when using on-column injection techniques. Columns should not be rinsed.

Phase: stabilized poly(90% biscyanopropyl/10% cyanopropylphenyl siloxane)

Temp. Limits: subambient to 275°C

McReynolds Nos.: x' y' z' u' s' = 402 629 520 744 623

LENGTH (m)	D _f (μm)	BETA	CAT. NO.	PRICE
0.25mm ID FUSED SILICA				
15	0.20	313	24109	
30	0.20	313	24110-U	
60	0.20	313	24111	
0.32mm ID FUSED SILICA				
30	0.20	320	24116-U	
60	0.20	320	24117	
0.53mm ID FUSED SILICA				
30	0.20	663	25319	

SP-2340

The highest polarity of any of the general purpose cyanosilicone phases. As with all cyano phase columns, these columns are useful for both high and low temperature separations of samples such as geometric isomers of fatty acid methyl esters, dioxins, and aromatic compounds.

This column meets USP G5 requirements.

Operating Conditions: More susceptible to damage by oxygen, moisture, and HCl than other silicone phases. Avoid solvents such as water and methanol when using on-column injection techniques. Columns should not be rinsed.

Phase: nonbonded; poly(biscyanopropyl siloxane)

Temp. Limits: subambient to 250°C

McReynolds Nos.: x' y' z' u' s' = 419 654 541 758 637

LENGTH (m)	D _f (μm)	BETA	CAT. NO.	PRICE
0.25mm ID FUSED SILICA				
15	0.20	313	24021	
30	0.20	313	24022	
60	0.20	313	24023	
0.32mm ID FUSED SILICA				
15	0.20	320	24138	
30	0.20	320	24075	
60	0.20	320	24076	

Order: 1.800.325.3010 Technical Service: 1.800.359.3041 Web: www.sigma-aldrich.com/supelco

Gas
Chromatography

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Capillary GC Special Purpose Columns (Chiral)

α -DEX 120

α -DEX 120 columns provide unique selectivity for enantiomeric separations of small molecules; also recommended for separating positional isomers (phenols, xylenes, etc.).

Phase: nonbonded; 20% permethylated α -cyclodextrin in SPB-35 poly(35% phenyl/65% dimethylsiloxane)

β -DEX 110, β -DEX 120

We recommend β -DEX columns for enantiomeric separations of a wide range of chiral compounds (ketones, esters, alkanes, alkenes, alcohols, acids, ethers, etc.). The 10% (β -DEX 110) and 20% (β -DEX 120) β -cyclodextrin content alters the elution order while maintaining similar enantioselectivity.

Phase: nonbonded; 10% and 20% permethylated β -cyclodextrin in SPB-35 poly(35% diphenyl/ 65% dimethylsiloxane)

γ -DEX 120

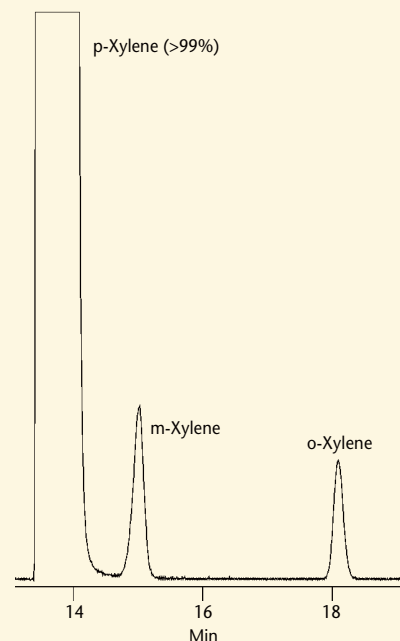
Because the elution order of the members of a chiral pair frequently reverses (enantioreversal) on a γ -DEX column, compared to the elution order on an α -DEX or β -DEX column, we recommend γ -DEX columns as complements to α -DEX and β -DEX columns.

Phase: nonbonded; 20% permethylated γ -cyclodextrin in SPB-35 poly(35% diphenyl/65% dimethylsiloxane)

LENGTH (m)	D _f (μm)	BETA	CAT. NO.	PRICE
α-DEX 120				
0.25mm ID FUSED SILICA				
30	0.25	250	24310	
β-DEX 110				
0.25mm ID Fused Silica				
30	0.25	250	24301	
60	0.25	250	24302	
β-DEX 120				
0.25mm ID Fused Silica				
30	0.25	250	24304	
60	0.25	250	24305-U	
γ-DEX 120				
0.25mm ID Fused Silica				
30	0.25	250	24307	

Temperature limits for all DEX columns: 30°C to 230°C.

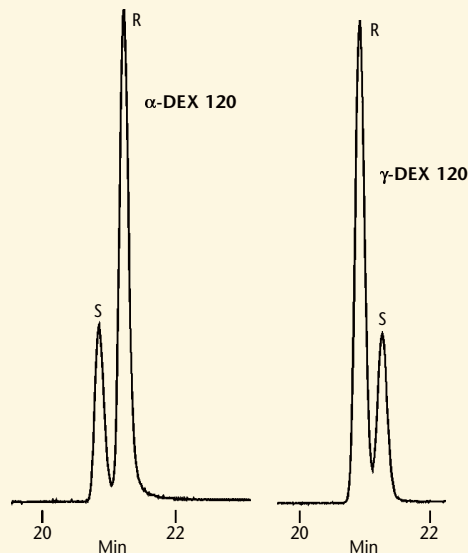
Resolve positional isomers in highly disproportionate mixtures



Column: α -DEX 120, 30m x 0.25mm ID, 0.25μm film
Cat. No.: **24310**
Oven: 50°C
Carrier: helium, 30cm/sec
Det.: FID, 300°C
Inj.: 0.6μL each analyte (neat), split (100:1), 80°C

794-0648

Use γ -DEX to reverse elution order for many compounds (methyl mandelate shown)

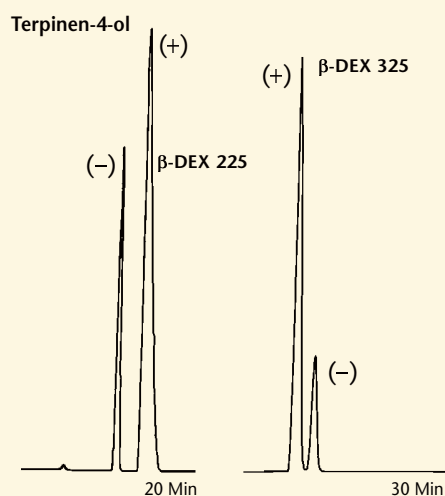


Column: α -DEX 120 and γ -DEX 120, 30m x 0.25mm ID, 0.25μm film
Cat. No.: **24310** (α -DEX 120), **24307** (γ -DEX 120)
Oven: 130°C
Carrier: helium, 35cm/sec
Det.: FID, 300°C
Inj.: 1μL methylene chloride
(1mg/mL each analyte), split (100:1), 250°C

794-0282,0283

Order: 1.800.325.3010 Technical Service: 1.800.359.3041 Web: www.sigma-aldrich.com/supelco

Selection kits offer the greatest likelihood of providing the separation you want



Column: β -DEX 225 and β -DEX 325, 30m x 0.25mm ID, 0.25 μ m film
Cat. No.: 24348 (β -DEX 225), 24308 (β -DEX 325)
Oven: 100°C
Carrier: helium, 25cm/sec
Det.: FID, 300°C
Inj.: 1 μ L methylene chloride (1mg/mL), split 100:1, 250°C

Cyclodextrin Column Selection Kits

These kits provide the tools you need to perform most chiral separations. Confirm identities of enantiomers by monitoring elution order changes (enantioreversal) from one column to another. In combination, the columns in the two kits span the full range of DEX column enantioselectivity, at substantial savings relative to purchasing individual columns.

Kit I: one 30m x 0.25mm ID, 0.25 μ m film column of each type: α -DEX 120, β -DEX 120, γ -DEX 120.

Kit II: one 30m x 0.25mm ID, 0.25 μ m film column of each type: β -DEX 120, β -DEX 225, γ -DEX 225, β -DEX 325.

DESCRIPTION	CAT. NO.	PRICE
Chiral Column Kit I	24340	
Chiral Column Kit II	24328-U	

RELATED INFORMATION

Request free literature by phone or fax, or see our website.

No.	Subject
T194877	Chiral applications/selection guide
T499055	Using DEX Column Selection Kit II

DEX-225 and DEX-325 Columns

It is difficult to predict the best phase for a given chiral or positional isomer separation, so we offer a broad range of DEX selectivities. We prepare DEX-225 and DEX-325 columns using dimethyl- and diacetyl-derivatized cyclodextrins. These columns can separate volatile chiral molecules, including alcohols, aldehydes, carboxylic acids, epoxides, esters, and halogenated compounds. We are continually developing specific applications on all our cyclodextrin columns, and suggest that you regularly consult our Web site for the most current chiral applications.

α -DEX 225

Phase: nonbonded; 25% 2,3-di-O-acetyl-6-O-TBDMS- α -cyclodextrin in SPB-20 poly(20% phenyl/80% dimethylsiloxane)

β -DEX 225

These columns provide unique selectivity for enantiomeric separations of small molecules: alcohols, aldehydes (e.g., 2-phenylpropionaldehyde), esters (e.g., methyl malate, methyl lactate), flavor compounds, and ketones.

Phase: nonbonded; 25% 2,3-di-O-acetyl-6-O-TBDMS- β -cyclodextrin in SPB-20 poly(20% phenyl/80% dimethylsiloxane)

γ -DEX 225

Phase: nonbonded; 25% 2,3-di-O-acetyl-6-O-TBDMS- γ -cyclodextrin in SPB-20 poly(20% phenyl/80% dimethylsiloxane)

α -DEX 325

Phase: nonbonded; 25% 2,3-di-O-methyl-6-O-TBDMS- α -cyclodextrin in SPB-20 poly(20% phenyl/80% dimethylsiloxane)

β -DEX 325

Phase: nonbonded; 25% 2,3-di-O-methyl-6-O-TBDMS- β -cyclodextrin in SPB-20 poly(20% phenyl/80% dimethylsiloxane)

γ -DEX 325

Phase: nonbonded; 25% 2,3-di-O-methyl-6-O-TBDMS- γ -cyclodextrin in SPB-20 poly(20% phenyl/80% dimethylsiloxane)

LENGTH (m)	D _f (μ m)	BETA	CAT. NO.	PRICE
α-DEX 225				
30	0.25	250	24311	
β-DEX 225				
30	0.25	250	24348	
γ-DEX 225				
30	0.25	250	24312	
α-DEX 325				
30	0.25	250	24303	
β-DEX 325				
30	0.25	250	24308	
γ-DEX 325				
30	0.25	250	24306	

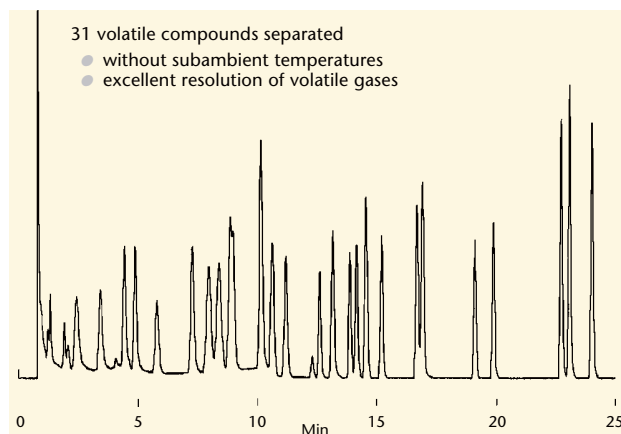
Fused silica columns, 0.25mm ID

Order: 1.800.325.3010 Technical Service: 1.800.359.3041 Web: www.sigma-aldrich.com/supelco

Gas
Chromatography

SUPELCO

Capillary GC Special Purpose Columns (Environmental)



Column: **VOCOL**, 30m x 0.53mm ID, 3.0µm film
 Cat. No.: **25320-U**
 Oven: 5°C (2 min) to 200°C at 5°C/min
 Carrier: helium, 7.5mL/min
 Det.: MS, Scan Range m/z = 35-260 at 0.6 sec/scan
 Inj.: 11min, 40mL/min, Dry Purge 3min, Desorb 250°C, 4 min

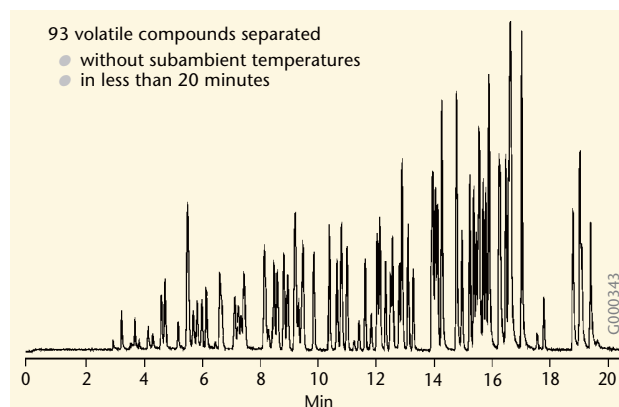
Proprietary
bonded phase

Volatiles: VOCOL

These intermediate polarity columns, designed for volatile organic compounds (VOCs) analysis, ensure greater retention and resolution of the more volatile compounds. Use in direct injection ports or coupled to purge-and-trap systems, for US EPA volatiles methods, including 502.2, 524.2, 624, 8240, 8260, and 8021.

Temp. Limits: subambient to 250°C (1.5µm film) or 230°C (3µm film)

LENGTH (m)	D _f (µm)	BETA	CAT. NO.	PRICE
0.20mm ID Fused Silica				
10	1.2	42	24129-U	
0.25mm ID Fused Silica				
30	1.5	42	24205-U	
60	1.5	42	24154	
0.32mm ID Fused Silica				
60	1.8	44	24217-U	
60	3.0	27	24157	
0.53mm ID Fused Silica				
30	3.0	44	25320-U	
60	3.0	44	25381	
105	3.0	44	25358	



Column: **SPB-624**, 75m x 0.53mm ID, 3µm film
 Cat. No.: **25432**
 Oven: 40°C (2 min) to 65°C at 5°C/min, to 155°C at 12°C/min, to 210°C at 25°C/min
 Carrier: helium, 10mL/min
 Det.: MSD, m/z = 35-260
 Inj.: Purge 11 min, Dry Purge 3min, Desorb 250°C, 5 min

Proprietary
bonded phase

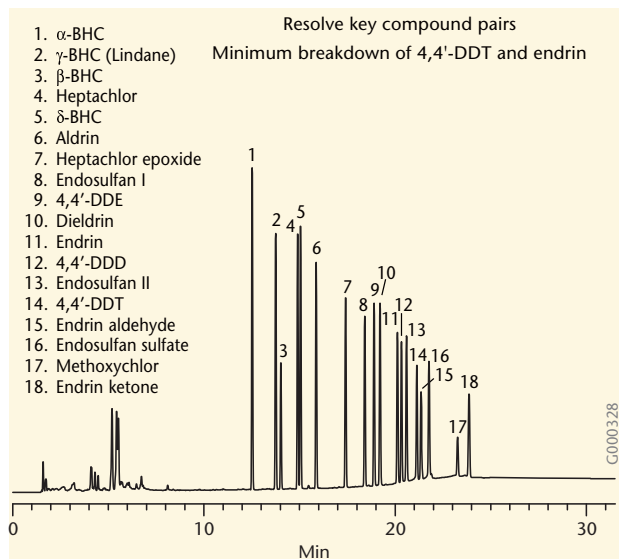
Volatiles: SPB-624

For purge-and-trap analyses of volatile compounds - Specially tested for separation, efficiency, and baseline bleed. Designed for purge-and-trap analyses of volatile halogenated, nonhalogenated and aromatic contaminants from air, drinking and waste water, and soil. SPB-624 columns meet the requirements of various US EPA methods: CLP-VOA, 502.2, 524.2, 601, 602, 624, 1624, TO-1, TO-2, TO-3, TO-14, 5041, 8010, 8015, 8020 and 8260.

Temp. Limits: subambient to 250°C (1.4µm or 1.8µm film) or 230°C (3.0µm film)

LENGTH (m)	D _f (µm)	BETA	CAT. NO.	PRICE
0.25mm ID Fused Silica				
30	1.4	44	24255	
60	1.4	44	24256	
0.32mm ID Fused Silica				
60	1.8	44	24251	
0.53mm ID Fused Silica				
30	3.0	44	25430	
75	3.0	44	25432	

Capillary GC Special Purpose Columns (Environmental)



Column: SPB-608, 30m x 0.25mm ID, 0.25 μ m film
Cat. No.: 24103-U
Oven: 150°C (4 min) to 290°C at 8°C/min, hold 10 min
Carrier: helium, 38cm/sec, set at 150°C
Det.: ECD, 300°C
Inj.: 1 μ L (0.4 μ g/mL each analyte), on-column, 220°C

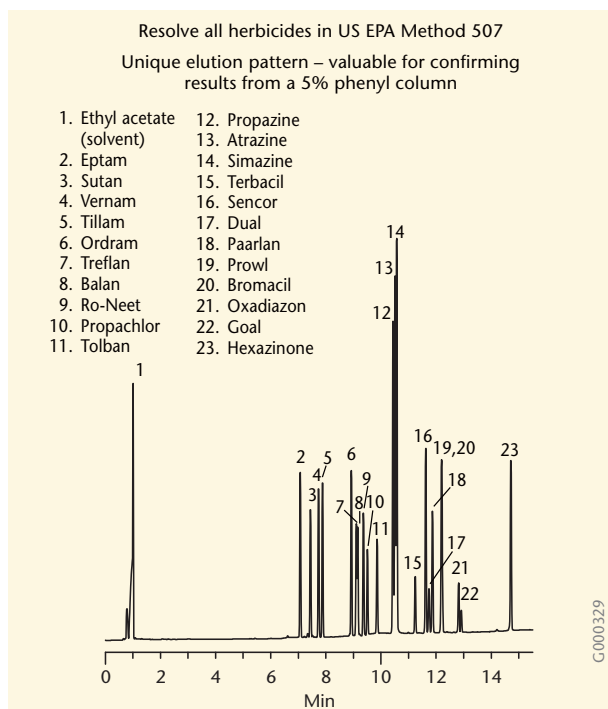
Pesticides/Herbicides: SPB-608

For chlorinated pesticides - Specially tested with low concentrations of 18 chlorinated pesticides, with an electron capture detector (ECD). These columns meet the criteria for minimum breakdown of 4,4'-DDT and endrin for US EPA Methods 508, 608, 8080, 8081, and SW-Pesticides.

Temp. Limits: subambient to 300°C

LENGTH (m)	D _f (μ m)	BETA	CAT. NO.	PRICE
0.25mm ID Fused Silica				
30	0.25	250	24103-U	
0.53mm ID Fused Silica				
15	0.50	265	25310-U	
30	0.50	265	25312	

Proprietary
bonded phase



Column: Sup-Herb, 15m x 0.53mm ID, 0.5 μ m film
Cat. No.: 25322
Oven: 60°C (1 min) to 280°C at 16°C/min
Carrier: helium, 5mL/min
Det.: NPD, 300°C
Inj.: 0.5 μ L 22 Herbicides Mix (5 μ g/mL each analyte in ethyl acetate), direct, 220°C

Pesticides/Herbicides: Sup-Herb

Specially tested intermediate polarity column for analyses of herbicides, per US EPA Method 507.

Temp. Limits: subambient to 300°C

LENGTH (m)	D _f (μ m)	BETA	CAT. NO.	PRICE
0.53mm ID Fused Silica				
15	0.50	265	25322	

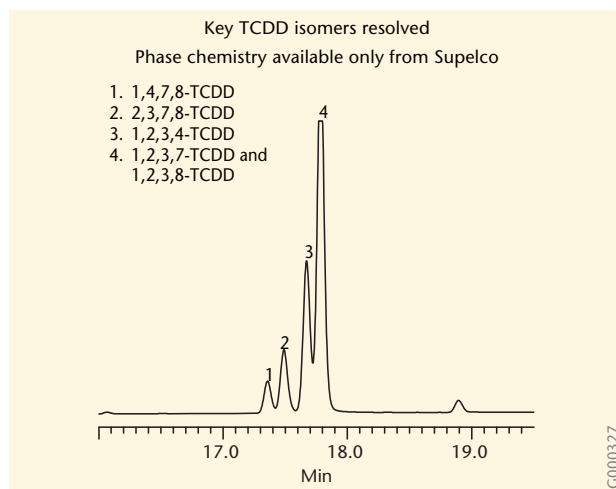
Order: 1.800.325.3010 Technical Service: 1.800.359.3041 Web: www.sigma-aldrich.com/supelco

Gas
Chromatography

SUPELCO

Capillary GC

Special Purpose Columns (Environmental, Air Monitoring, High Temperature)



Column: SP-2331, 60m x 0.32mm ID, 0.2µm film
Cat. No.: 24105-U
Oven: 200°C (1 min) to 250°C at 3°C/min, hold 10 min
Carrier: helium, 30cm/sec (set at 200°C)
Det.: ECD, 270°C
Inj.: 1µL TCDD PE Mix (1.5µg/mL each analyte in n-dodecane), on-column, 200°C

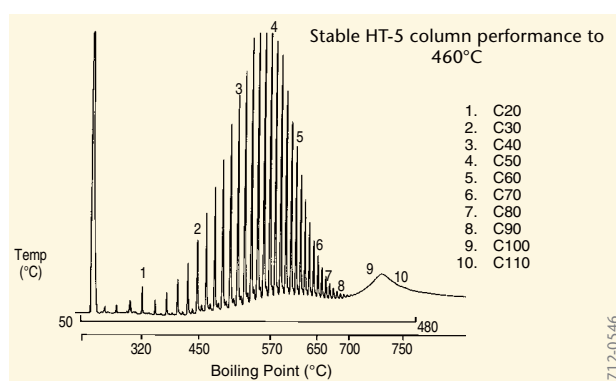
Proprietary stabilized phase

Dioxins: SP-2331

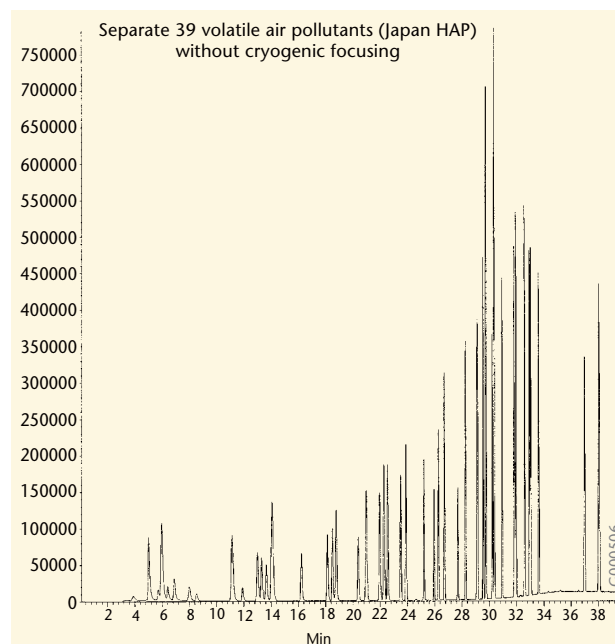
For TCDD (dioxin) isomers - A highly polar cyanosilicone stationary phase, specially tested for analyses of TCDD isomers. The phase is stabilized, providing a maximum temperature slightly higher than nonbonded cyanosilicone phases, such as SP-2330.

Temp. Limits: subambient to 275°C

LENGTH (m)	D _f (µm)	BETA	CAT. NO.	PRICE
0.25mm ID Fused Silica				
30	0.20	313	24257	
60	0.20	313	24104-U	
0.32mm ID Fused Silica				
60	0.20	400	24105-U	



Column: HT-5, 6m x 0.53mm ID, 0.10µm film
Cat. No.: 25004
Oven: 50°C to 480°C at 10°C/min
Inj.: on-column



Column: SPB-HAP, 60m x 0.32mm ID, 4.0µm film
Cat. No.: 25020-U
Oven: 35°C (8 min) to 230°C at 8°C/min, hold 10 min
Carrier: helium, 2.5mL/min
Det.: FID, 250°C
Inj.: thermal desorption

Air Monitoring: SPB-HAP

For hazardous air pollutants - This column was developed to provide the best resolution of very volatile, regulated components. The thick film focuses analyses on the front of the column, without cryogenic focusing.

Phase: bonded poly(dimethylsiloxane)

Temp. Limits: -60°C to 300°C

LENGTH (m)	D _f (µm)	BETA	CAT. NO.	PRICE
0.32mm ID Fused Silica				
60	4.0	20	25020-U	

High Temperature: HT-5

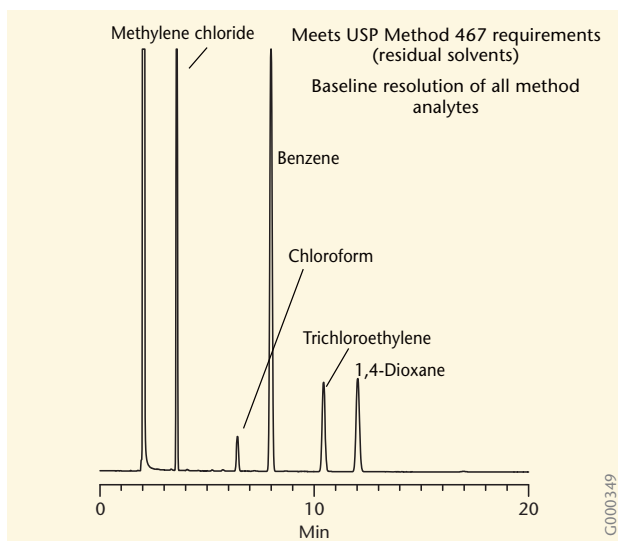
For highest-temperature separations - SGE aluminum-clad columns coated with a carborane phase, offering the highest maximum temperature of any commercially available column. They display low bleed for GC/MS and simulated distillation analyses.

Phase: bonded; siloxane-carborane (5% phenyl equivalent)

Temp. Limits: 10°C to 460°C

LENGTH (m)	D _f (µm)	BETA	CAT. NO.	PRICE
0.32mm ID Fused Silica				
12	0.10	800	25002	
25	0.10	800	25003	
0.53mm ID Fused Silica				
6	0.10	1325	25004	
12	0.15	883	25005-U	

Capillary GC Special Purpose Columns (Solvents, Steroids)



Column: **OVI-G43**, 30m x 0.53mm ID, 3.0µm film
 Cat. No.: **25396**
 Oven: 40°C
 Carrier: helium, 35cc/min
 Det.: FID, 260°C
 Inj.: 1µL, direct, 140°C

Solvents: OVI-G43

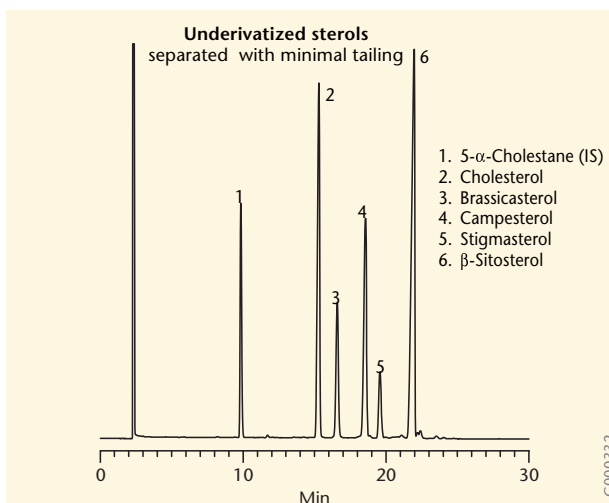
For USP Analysis of organic volatile impurities (OVIs) - This column is specially prepared and tested to meet the requirements of United States Pharmacopoeia (USP) Method 467 and the European Pharmacopoeia general method for determining residual organic solvents in pharmaceutical preparations. Use this column to separate OVIs for research purposes or qualitative analysis. The USP and European Pharmacopoeia methods also specify using a deactivated 5-meter guard column.

This column meets USP G43 requirements.

Phase: bonded; poly(6% cyanopropylphenyl/
94% dimethylsiloxane)

Temp. Limits: -20°C to 260°C

LENGTH (m)	D _f (µm)	BETA	CAT. NO.	PRICE
0.53mm ID Fused Silica				
30	3.0	44	25396	
Deactivated Guard Column for OVI-G43				
5m x 0.53mm ID			25339	
Other Columns for Residual Solvents Analysis				
G27 (SPB-5) 30m x 0.53mm ID, 5.0µm			25347	
G16 (SUPELCO WAX 10) 30m x 0.53mm ID, 1.0µm			25301-U	



Column: **SAC-5**, 30m x 0.25mm ID, 0.25µm film
 Cat. No.: **24156**
 Oven: 285°C
 Carrier: helium, 25cm/sec, set at 265°C
 Det.: FID, 300°C
 Inj.: 1µL Sterol Standard Test Mix (25mg/mL total analytes in methylene chloride), split (100:1), 300°C

Steroids: SAC-5

An SE-54 type phase, developed and tested for reproducible analyses of plant sterols, cholesterol, and other animal sterols.

Phase: bonded; poly(5% diphenyl/
95% dimethylsiloxane)

Temp. Limits: -60°C to 320°C

McReynolds Nos.: x' y' z' u' s' = 19 74 64 93 62

LENGTH (m)	D _f (µm)	BETA	CAT. NO.	PRICE
0.25mm ID Fused Silica				
15	0.25	250	24151	
30	0.25	250	24156	

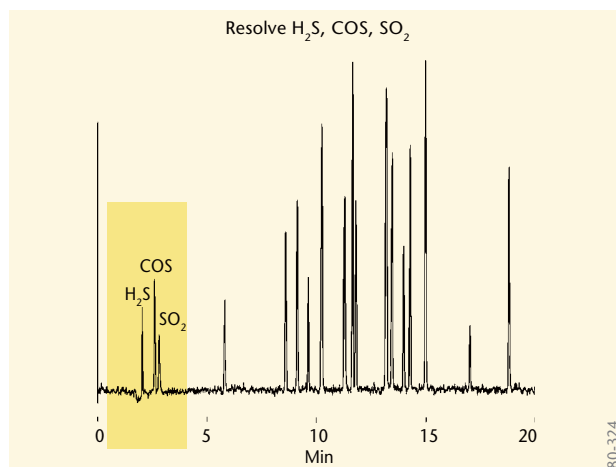
Order: 1.800.325.3010 Technical Service: 1.800.359.3041 Web: www.sigma-aldrich.com/supelco

Gas
Chromatography

SUPELCO

Capillary GC

Special Purpose Columns (Sulfur Compounds, SCOT Columns)



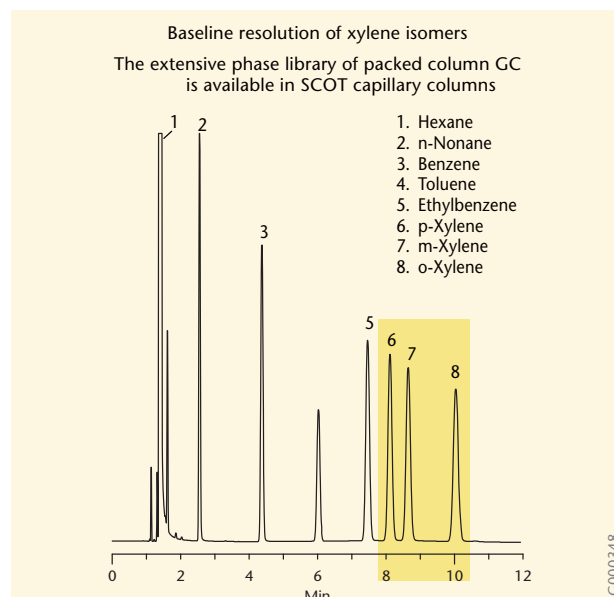
Column: **SPB-1 SULFUR**, 30m x 0.32mm ID, 4μm film
 Cat. No.: **24158**
 Oven: -10°C (3min) to 300°C at 10°C/min
 Carrier: helium, 20cm/sec
 Det.: sulfur chemiluminescence
 Inj.: 0.1mL sulfur gas standard, split 10:1

Sulfur Compounds (Volatile): **SPB-1 SULFUR**

A very thick film version of our SPB-1 columns, specially developed for analyses of sulfur gases and other volatile sulfur compounds. The column displays relatively low column bleed, even for the exceptionally thick film (4μm) of stationary phase, which makes it compatible for use with the Sievers Sulfur Chemiluminescence Detector (SCD) and other sulfur-specific detectors.

Phase: bonded; poly(dimethylpolysiloxane)
Temp. Limits: -60°C to 300°C

LENGTH (m)	D _f (μm)	BETA	CAT. NO.	PRICE
0.32mm ID Fused Silica				
30	4.0	20	24158	



Column: **Bentone 34/DNDP SCOT**, 50' x 0.02" ID
 Cat. No.: **25521**
 Oven: 90°C
 Carrier: helium, 27cm/sec, set at 90°C
 Det.: 220°C
 Inj.: 220°C

Gases: **SCOT Stainless Steel**

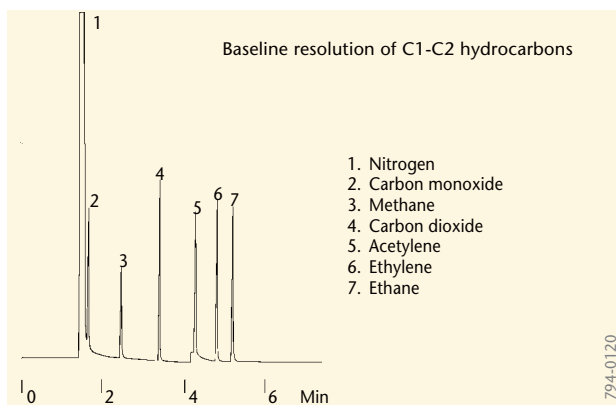
Support-coated open tubular (SCOT) columns are prepared by depositing a layer of liquid phase-coated support particles on the inner wall of the tubing. This technology, developed by PerkinElmer, makes available many phases that cannot be obtained on conventional wall-coated open tubular capillary columns. SCOT columns combine the sensitivity and excellent sample resolution of capillary GC with the extensive stationary phase library of packed column GC.

50' x 1/32" OD x 0.02" ID with 1/16" connections

MAX. TEMP.		BETA	CAT. NO.	PRICE
LIQUID PHASE	(°C)			
Stainless Steel SCOT Columns				
Bentone 34/DNDP ²	150	45	25521	
BMEA	100	40	25538	
Squalane	120	50	25535	
TCEP	150	40	25536	

² Di-n-decylphthalate

Capillary GC Special Purpose Columns (Gases - PLOT Columns)

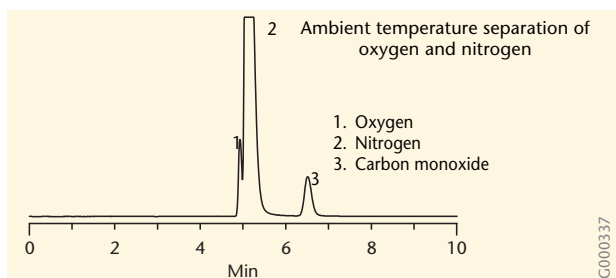


Column: Carboxen-1006 PLOT, 30m x 0.53mm ID
Cat. No.: 25461
Oven: 35°C (5min) to 225°C at 24°C/min

Gases: Carboxen-1006 PLOT¹

For permanent gases and C1 – C3 light hydrocarbons - The porous carbon molecular sieve (surface area ~ 750m²/gram) in Carboxen-1006 porous layer open tubular (PLOT) columns separates permanent gases and C1, C2, and C3 light hydrocarbons, using above-ambient initial temperatures. The columns also are ideal for resolving formaldehyde/water/methanol (formalin) mixtures and monitoring impurities in ethylene. Use Carboxen-1006 columns with high flow rates and rapid temperature programs, up to 250°C, to ensure excellent, fast separations.

DIMENSIONS (FUSED SILICA)	MAX. TEMP. (°C)	CAT. NO.	PRICE
30m x 0.32mm ID	250	24241-U	
30m x 0.53mm ID ²	250	25461	

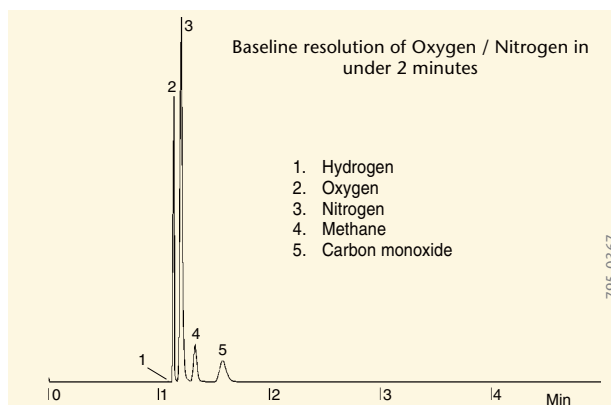


Column: Carboxen-1010 PLOT, 30m x 0.53mm ID
Cat. No.: 25467
Oven: 35°C

Gases: Carboxen-1010 PLOT¹

For permanent gases, C2 and C3 hydrocarbons - A carbon molecular sieve column for separating hydrogen, nitrogen, carbon monoxide, methane, carbon dioxide, and C2 and C3 hydrocarbons. Oxygen is separated from nitrogen.

DIMENSIONS (FUSED SILICA)	MAX. TEMP. (°C)	CAT. NO.	PRICE
30m x 0.32mm ID	250	24246	
30m x 0.53mm ID ²	250	25467	

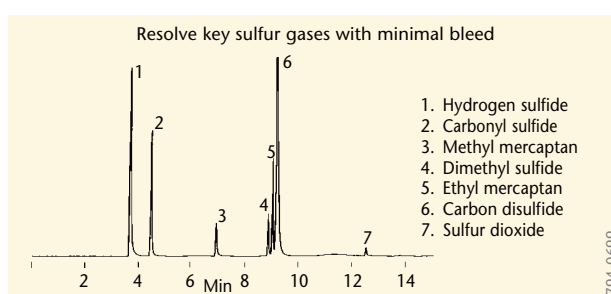


Column: Mol Sieve 5A PLOT, 30m x 0.53mm ID
Cat. No.: 25463
Oven: 65°C, helium, 10mL/min.

Gases: Mol Sieve 5A PLOT¹

For permanent gases - Oxygen, nitrogen, carbon monoxide and methane can be separated in less than 5 minutes. More difficult separations, such as argon from oxygen, can be achieved by using subambient temperatures (15°C or below).

DIMENSIONS (FUSED SILICA)	MAX. TEMP. (°C)	CAT. NO.	PRICE
30m x 0.32mm ID	300	24243	
30m x 0.53mm ID ²	300	25463	



Column: Supel-Q PLOT, 30m x 0.53mm ID
Cat. No.: 25462
Oven: 50°C (min) to 250°C at 10°C/min

Gases: Supel-Q PLOT¹

For many hydrocarbon and other compounds - Supel-Q PLOT columns contain a porous divinylbenzene polymer that effectively resolves carbon dioxide and C1-C4 hydrocarbons at above ambient temperatures. It also is suitable for analyses of other gases, such as sulfur gases, and alcohols, ketones, aldehydes, and many polar compounds. Gasoline and other petroleum fractions can be analyzed as well. These columns exhibit very little bleed, even at the maximum temperature. Relative to packed columns (e.g., Porapak-Q), Supel-Q PLOT columns offer better resolution in less time.

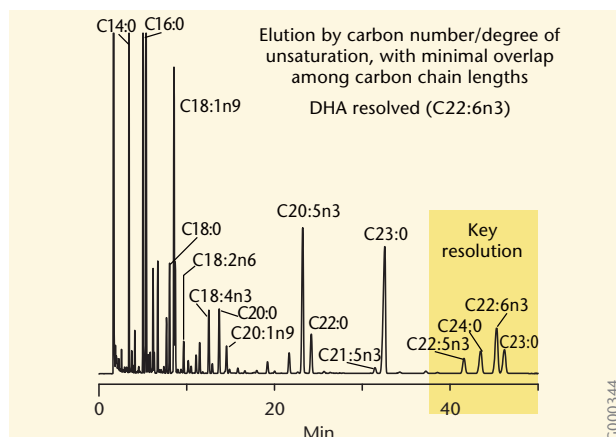
DIMENSIONS (FUSED SILICA)	MAX. TEMP. (°C)	CAT. NO.	PRICE
30m x 0.32mm ID	250	24242	
30m x 0.53mm ID ²	250	25462	

¹ A proprietary procedure fixes particles to the fused silica tubing and ensures they will not be dislodged in normal use. Manufactured under US patents 5,599,445; 5,607,580; 5,609,756; 5,620,603; and 5,630,937.

² 0.53mm ID column can be used in packed column chromatographs.

Capillary GC

Special Purpose Columns (FAMES)



Column: **Omegawax 320**, 30m x 0.32mm ID, 0.25µm film
 Cat. No.: **24152**
 Oven: 200°C
 Carrier: helium, 25cm/sec, set at 200°C (135-140cc/min split vent flow, 30cc/min nitrogen make-up gas)
 Det.: FID, 260°C
 Inj.: 1µL of Omegawax Test Mix (50mg FAMES/mL hexane), split 100:1, 250°C

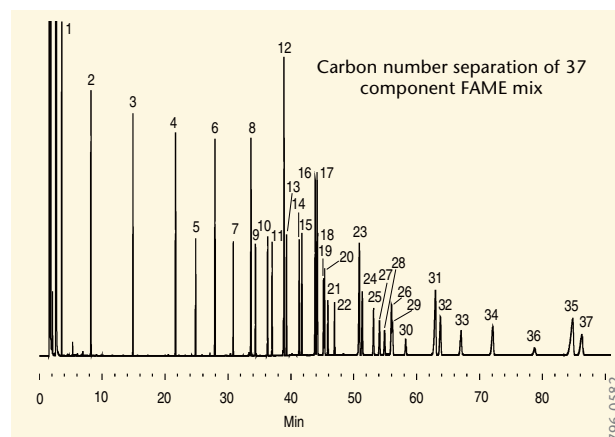
Fatty Acids (FAMES): Omegawax

For omega 3 and 6 fatty acids - These columns were developed to provide highly reproducible analyses of fatty acid methyl esters, specifically the omega 3 and 6 fatty acids. The columns are checked for reproducibility of FAME equivalent chain length (ECL) values and resolution of key components.

This column meets USP G16 requirements.

Phase: bonded; poly(ethylene glycol)
 Temp. Limits: 50°C to 280°C

LENGTH (m)	D _f (µm)	BETA	CAT. NO.	PRICE
OMEGAWAX 250				
0.25mm ID Fused Silica				
30	0.25	250	24136	
OMEGAWAX 320				
0.32mm ID Fused Silica				
30	0.25	320	24152	
OMEGAWAX 530				
0.53mm ID Fused Silica				
30	0.50	265	25374	



Column: **SPB-PUFA**, 30m x 0.32mm ID, 0.20µm film
 Cat. No.: **24323**
 Oven: 50°C (hold 2 min), 4°C/min to 210°C
 Carrier: helium, 25cm/sec, set at isothermal temp.
 Det.: FID, (2 x 10-11), 260°C
 Inj.: 1µL of 37 Component FAME Mix (Cat. No. 47885-U), split 100:1, 250°C

Fatty Acids (FAMES): SPB-PUFA

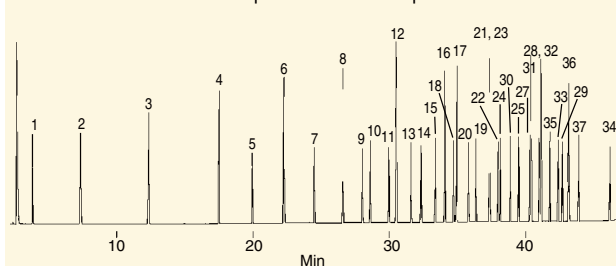
For polyunsaturated fatty acid methyl esters - These columns provide highly reproducible analyses of polyunsaturated fatty acid methyl esters. The lower polarity poly (alkylene glycol) phase features improved "carbon number" separations, compared to poly(ethylene glycol) columns such as Omegawax columns and SUPELCOWAX 10 columns.

Phase: bonded; poly(alkylene glycol)
 Temp. Limits: 50°C to 220°C

LENGTH (m)	D _f (µm)	BETA	CAT. NO.	PRICE
0.25mm ID Fused Silica				
30	0.20	313	24314	
0.32mm ID Fused Silica				
30	0.20	400	24323	

Capillary GC Special Purpose Columns (FAMES)

Fast carbon number separation of 37 component FAME mix



Component (acid methyl esters)	Weight %	Component (acid methyl esters)	Weight %
1. C4:0 (Butyric)	4	22. C18:3n3 (α -Linolenic)	2
2. C6:0 (Caproic)	4	23. C20:0 (Arachidic)	4
3. C8:0 (Caprylic)	4	24. C20:1n9 (<i>cis</i> -11-Eicosenoic)	2
4. C10:0 (Capric)	4	25. C20:2 (<i>cis</i> -11,14-Eicosadienoic)	2
5. C11:0 (Undecanoic)	2	26. C20:3n6 (<i>cis</i> -8,11,14-Eicosatrienoic)	2
6. C12:0 (Lauric)	4	27. C20:3n3 (<i>cis</i> -11,14,17-Eicosatrienoic)	2
7. C13:0 (Tridecanoic)	2	28. C20:4n6 (Arachidonic)	2
8. C14:0 (Myristic)	4	29. C20:5n3 (<i>cis</i> -5,8,11,14,17-Eicosapentaenoic)	2
9. C14:1 (Myristoleic)	2	30. C21:0 (Hentacosanoic)	2
10. C15:0 (Pentadecanoic)	2	31. C22:0 (Behenic)	4
11. C15:1 (<i>cis</i> -10-Pentadecenoic)	2	32. C22:1n9 (Erucic)	2
12. C16:0 (Palmitic)	6	33. C22:2 (<i>cis</i> -13,16-Docosadienoic)	2
13. C16:1 (Palmitoleic)	2	34. C22:6n3 (<i>cis</i> -4,7,10,13,16,19-Docosahexaenoic)	2
14. C17:0 (Heptadecanoic)	2	35. C23:0 (Tricosanoic)	2
15. C17:1 (<i>cis</i> -10-Heptadecenoic)	2	36. C24:0 (Lignoceric)	4
16. C18:0 (Stearic)	4	37. C24:1n9 (Nervonic)	2
17. C18:1n9c (Oleic)	4		
18. C18:1n9t (Elaidic)	2		
19. C18:2n6c (Linoleic)	2		
20. C18:2n6t (Linolelaidic)	2		
21. C18:3n6 (γ -Linolenic)	2		

795-0781

Column: SP-2380, 30m x 0.25mm ID, 0.20 μ m film

Cat. No.: 24110-U

Oven: 50°C (2 min) to 250°C at 4°C/min, hold 15 min

Carrier: helium, 20cm/sec, 150°C

Det.: FID, 260°C

Inj.: 1 μ L of Supelco 37 Component FAME Mix (Cat. No. 47885-U, 10mg/mL total), split 100:1, 250°C

Fatty Acids (FAMES): SP-2380

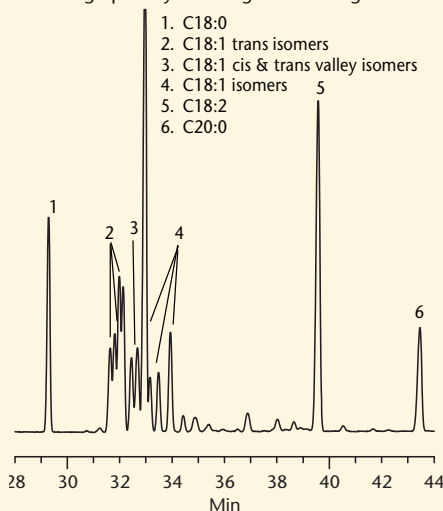
For separations by carbon number - This column was developed for high resolution and efficiency, and fast analyses of positional and geometric isomers of fatty acid methyl esters.

Phase: stabilized poly(90% biscyanopropyl/
10% cyanopropylphenyl siloxane)

Temp. Limits: subambient to 275°C

LENGTH (m)	D _f (μ m)	BETA	CAT. NO.	PRICE
0.25mm ID Fused Silica				
100	0.20	313	24317	

Positional and geometric isomers separated by very high polarity and long column length



1. C18:0
2. C18:1 trans isomers
3. C18:1 cis & trans valley isomers
4. C18:1 isomers
5. C18:2
6. C20:0

Column: SP-2560, 100m x 0.25mm, 0.20 μ m film

Cat. No.: 24056

Oven: 170°C

Carrier: helium, 20cm/sec, set at 170°C

Det.: FID, 200°C

Inj.: 1 μ L positional cis/trans standard (Cat. No. 45170) (5.0mg/mL FAME isomers in methylene chloride), split 100:1, 200°C

Fatty Acids (FAMES): SP-2560

For cis/trans positional isomers - Specially prepared and tested columns, designed to separate geometric-positional (cis/trans) isomers of fatty acid methyl esters. Recommended for separating FAMES in hydrogenated vegetable oil samples.

Phase: nonbonded; biscyanopropyl polysiloxane

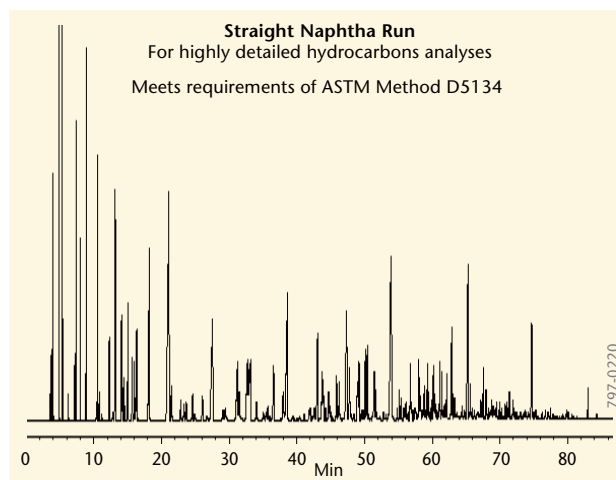
Temp. Limits: subambient to 250°C

LENGTH (m)	D _f (μ m)	BETA	CAT. NO.	PRICE
0.25mm ID Fused Silica				
100	0.20	313	24056	

LENGTH (m)	D _f (μ m)	BETA	CAT. NO.	PRICE
0.25mm ID Fused Silica				
100	0.20	313	24317	

Capillary GC

Special Purpose Columns (Petroleum - Hydrocarbons, MTBE)



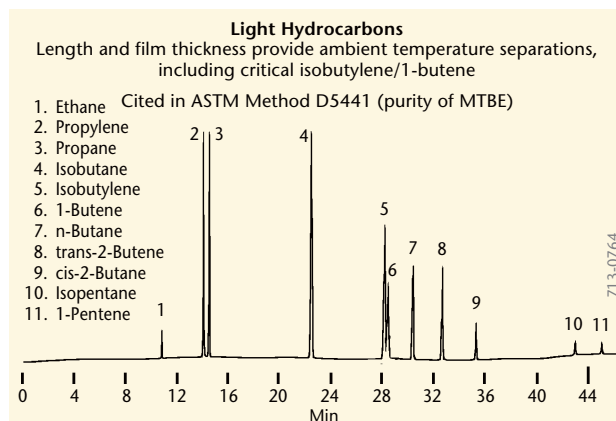
Column: Petrocol DH 50.2, 50m x 0.20mm ID x 0.50µm film
Cat. No.: 24133-U
Oven: 35°C (30min) to 200°C (20min) at 2°C/min

Hydrocarbons: Petrocol DH 50.2

For detailed hydrocarbons analyses - A narrow bore column for detailed hydrocarbon analyses of naphthas, gasolines, and similar samples, according to ASTM Test Method D5134.

Phase: bonded; poly(dimethylsiloxane)
Temp. Limits: -60°C to 320°C

LENGTH (m)	D _f (µm)	BETA	CAT. NO.	PRICE
0.20mm ID Fused Silica				
50	0.50	100	24133-U	

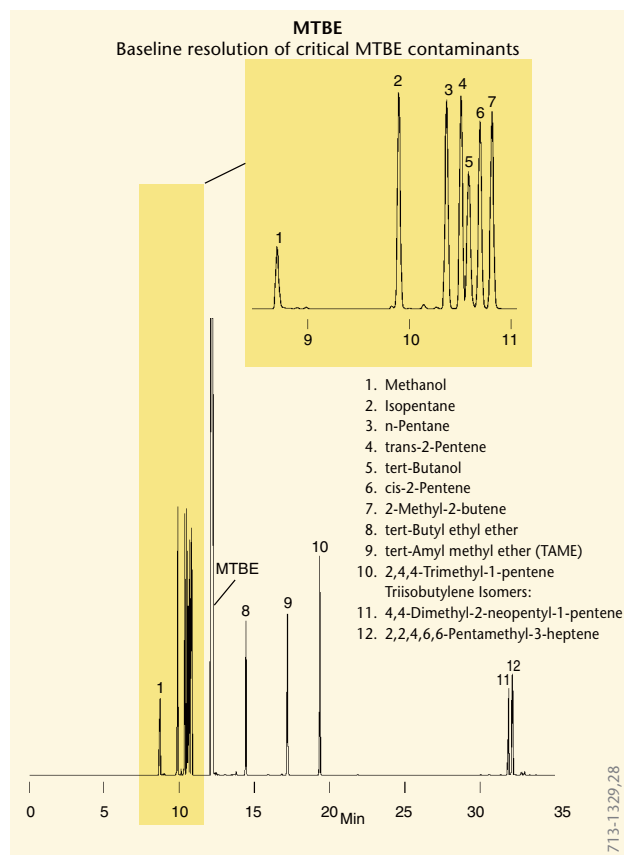


Column: Petrocol DH 150, 150m x 0.25mm ID, 1.0µm film
Cat. No.: 24155
Oven: -20°C (30min) to 75°C at 5°C/min

Hydrocarbons: Petrocol DH 150

For detailed hydrocarbons analyses - The longest capillary column commercially available as a stock item. Columns typically display more than 600,000 theoretical plates. For detailed purity analyses of light hydrocarbon gases and petroleum products (oxygenates, solvents, naphthas, gasolines, etc.).

LENGTH (m)	D _f (µm)	BETA	CAT. NO.	PRICE
0.25mm ID Fused Silica				
150	1.0	63	24155	



Column: Petrocol DH, 100m x 0.25mm ID, 0.50µm film
Cat. No.: 24160-U
Oven: 50°C (13 min) to 180°C at 10°C/min
Carrier: helium, 20cm/sec; vent flow 140mL/min (set at 35°C)
Det.: FID (310°C)
Inj.: 1µL MTBE containing 1% each analyte (MTBE Contaminants Mix A, Cat. No. 47942) split (200:1) (250°C)

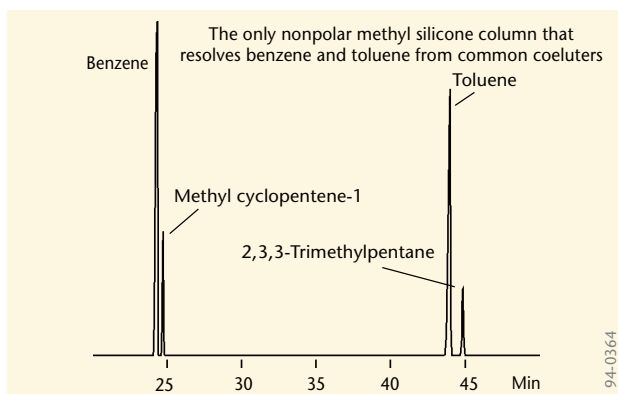
Hydrocarbons: Petrocol DH

For PNA, PONA, PIANO-type analyses - A highly reproducible column displaying more than 400,000 theoretical plates, designed for detailed analyses of petroleum products. Includes an extensive retention index data sheet of 400+ analytes.

Phase: bonded; poly(dimethylsiloxane)
Temp. Limits: -60°C to 320°C

LENGTH (m)	D _f (µm)	BETA	CAT. NO.	PRICE
0.25mm ID Fused Silica				
100	0.50	125	24160-U	

Special Purpose Columns (Petroleum - Hydrocarbons, SIMDIS)



Column: Petrocol DH Octyl, 100m x 0.25mm ID, 0.5 μ m film
 Cat. No.: 24282
 Oven: 35°C (15min hold) to 200°C (15min hold) at 1°C/min
 Det.: FID, 260°C
 Inj.: 1 μ L, split (215:1), 250°C

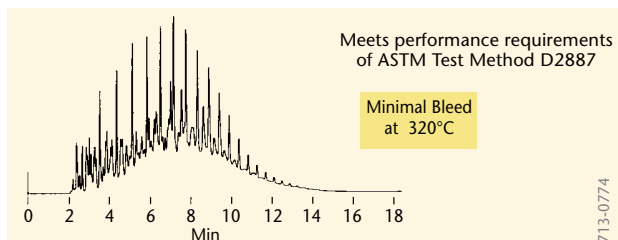
Hydrocarbons: Petrocol DH Octyl

For detailed analyses of petroleum products - This highly reproducible column offers unique selectivity not obtainable with poly(dimethylsiloxane) columns, such as baseline separations of benzene/1-methylcyclopentene and toluene/2,3,3-trimethylpentane.

Phase: bonded; poly(50% n-octyl/50% methylsiloxane)

Temp. Limits: -60°C to 220°C

LENGTH (m)	D _f (μ m)	BETA	CAT. NO.	PRICE
0.25mm ID Fused Silica				
100	0.50	125	24282	



Column: Petrocol 2887, 5m x 0.53mm ID, 5.0 μ m film
 Cat. No.: 25323
 Oven: -20°C to 320°C at 20°C/min, hold 5 min
 Carrier: nitrogen, 6mL/min
 Det.: FID
 Inj.: 0.1 μ L Cat. No. 48873, direct (350°C)

SIMDIS: Petrocol 2887

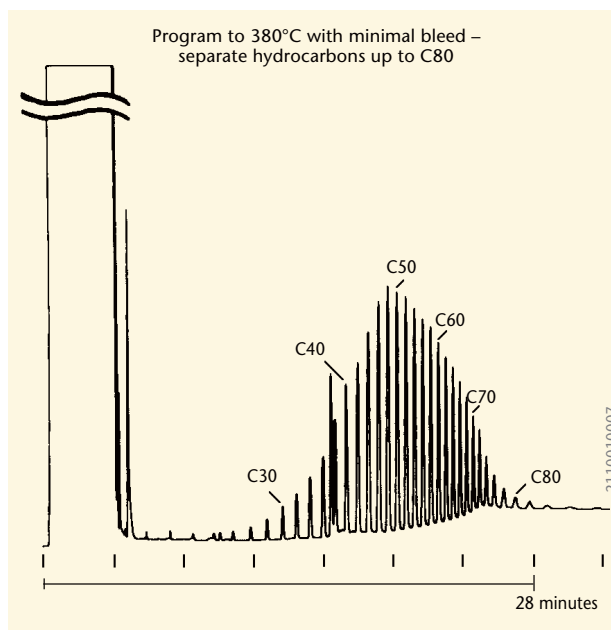
For ASTM Test Method D2887 - Developed and tested to meet or exceed column performance requirements for simulated distillation of petroleum fractions having boiling points up to 1000°F, according to ASTM Test Method D2887.

Phase: bonded; poly(dimethylsiloxane)

Temp. Limits: subambient to 350°C

LENGTH (m)	D _f (μ m)	BETA	CAT. NO.	PRICE
0.53mm ID Fused Silica				
5 ¹	0.50	265	25323	

¹ 5" cage



Column: Petrocol EX2887, 5m x 0.53mm ID, 0.10 μ m film
 Cat. No.: 25337
 Oven: 50°C (3min) to 380°C at 15°C/min
 Carrier: helium, 5mL/min
 Det.: FID, 400°C
 Inj.: 0.2 μ L (10mg/mL Polywax 655 in p-xylene), cool on-column injection

SIMDIS: Petrocol EX2887

For extended ASTM Test Method D2887 - A thin film version of the Petrocol 2887 column, developed for extended D2887 SIMDIS analysis of samples having final boiling points greater than 1000°F.

Phase: bonded; poly(dimethylsiloxane)

Temp. Limits: subambient to 380°C

LENGTH (m)	D _f (μ m)	BETA	CAT. NO.	PRICE
0.53mm ID Fused Silica				
5	0.10	1325	25337	

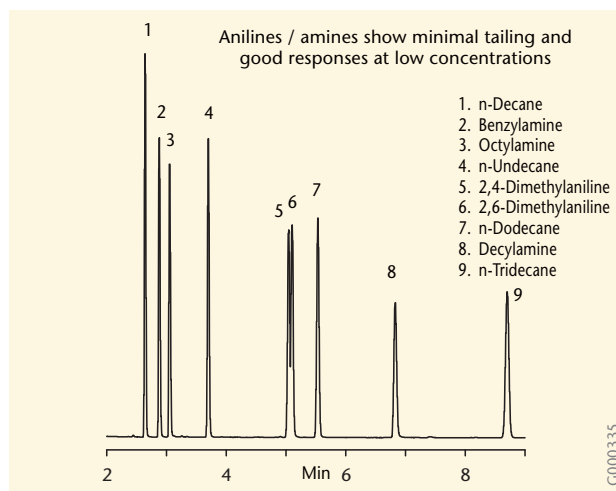
Order: 1.800.325.3010 Technical Service: 1.800.359.3041 Web: www.sigma-aldrich.com/supelco

Gas Chromatography

SUPELCO

Capillary GC

Special Purpose Columns (Amines, Aromatics)



Column: PTA-5, 30m x 0.25mm ID, 0.5µm film
 Cat. No.: 24277
 Oven: 128°C
 Carrier: helium, 40cm/sec
 Det.: FID, 220°C
 Inj.: 1µL PTA-5 Test Mix (500µg/mL each analyte in methyl tert butyl ether), split (100:1), 220°C

Amines: PTA-5

This column is a specially prepared, base-deactivated poly(5% diphenyl/95% dimethylsiloxane) column designed for analyses of amines and other basic analytes.

Phase: bonded; base-modified poly(5% diphenyl/95% dimethylsiloxane)
 Temp. Limits: -60°C to 320°C

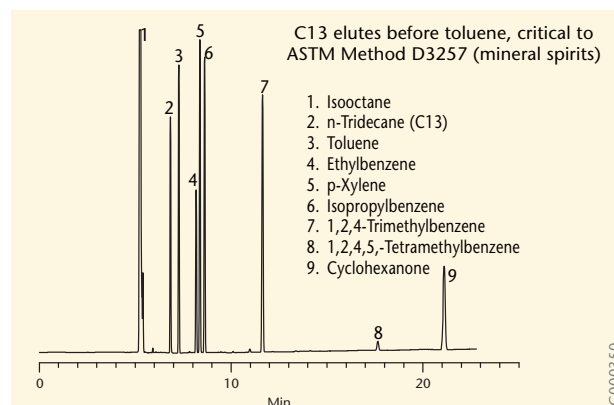
LENGTH (m)	D _f (µm)	BETA	CAT. NO.	PRICE
0.25mm ID Fused Silica				
30	0.50	125	24277	
30	1.0	625	24330	
0.32mm ID Fused Silica				
30	0.5	160	24331	
30	1.0	80	24332	
30	1.5	53	24333	
0.53mm ID Fused Silica				
30	0.5	265	25437	
30	1.5	88	25438	
30	3.0	44	25439	

Amines: Carbowax Amine

For primary, secondary, and tertiary amines - The Carbowax Amine column is a specially prepared, base-deactivated polyethylene glycol column designed for the analysis of primary, secondary, and tertiary amines and other volatile basic analytes.

Phase: nonbonded; base-modified poly(ethylene glycol)
 Temp. Limits: 60°C to 200°C

LENGTH (m)	D _f (µm)	BETA	CAT. NO.	PRICE
0.53mm ID Fused Silica				
15	1.0	133	25352	
30	1.0	133	25353	
60	1.0	133	25354	



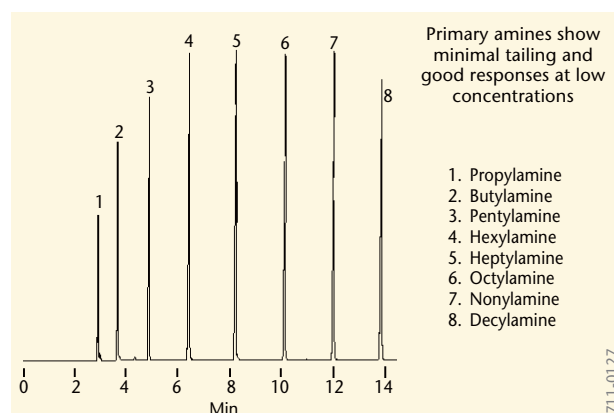
Column: TCEP, 60m x 0.25mm ID, 0.44µm film
 Cat. No.: 24153
 Oven: 110°C
 Carrier: helium, 20cm/sec
 Det.: FID, 170°C
 Inj.: 1µL TCEP test mix, split (100:1), 170°C

Aromatics: TCEP

This highly polar phase offers unique polarity for certain separations, despite its relatively low temperature limit and the fact that it is not a bonded phase. Because many aromatic compounds have retention indices greater than 1100 on TCEP, it is used for analyses of aromatics in mineral spirits and impurities in individual aromatics and oxygenates.

Phase: nonbonded; 1,2,3-tris-2-cyano-ethoxypropane
 Temp. Limits: subambient to 145°C
 McReynolds Nos.: x' y' z' u' s' = 594 857 759 1031 917

LENGTH (m)	D _f (µm)	BETA	CAT. NO.	PRICE
0.25mm ID Fused Silica				
60	0.44	142	24153	
0.32mm ID Fused Silica				
60	0.51	157	24161	



Column: Carbowax Amine, 30m x 0.53mm ID, 1.0µm film
 Cat. No.: 25353
 Oven: 50°C to 200°C at 8°C/min, hold 10 min
 Carrier: helium, 20cm/sec (set at 170°C)
 Det.: FID, 220°C
 Inj.: 0.02µL neat amines mix, split (100:1), 220°C

SPB-1

Nonpolar methylsilicone columns that separate sample components according to boiling point. This bonded polymer matches the polarity of its nonbonded predecessors, SE-30 and SP-2100. The SPB-1 phase is used in many of our Petrocol specialty columns.

This column meets USP G1, G2 and G9 requirements.

Operating Conditions: Chemically compatible with water and other injection solvents. Sensitive to strong inorganic acids and bases. Columns can be rinsed.

Phase: bonded; poly(dimethylsiloxane)

Temp. Limits: -60°C to 320°C

McReynolds Nos.: x' y' z' u' s' = 4 58 43 56 38

LENGTH (m)	D _i (μm)	BETA	CAT. NO.	PRICE
0.10mm ID FUSED SILICA				
15	0.10	250	24338	
0.20mm ID FUSED SILICA				
15	0.20	250	24162	
30	0.20	250	24163	
12	0.33	152	24229-U	
25	0.33	152	24230-U	
0.25mm ID FUSED SILICA				
30	0.10	625	24261	
15	0.25	250	24026	
30	0.25	250	24028	
60	0.25	250	24030-U	
100	0.25	250	24198	
15	1.0	63	24027	
30	1.0	63	24029	
60	1.0	63	24031	
100	1.0	63	24220-U	
0.32mm ID FUSED SILICA				
30	0.10	800	24290	
15	0.25	320	24099	
30	0.25	320	24044	
60	0.25	320	24046	
100	0.25	320	24228-U	
15	1.0	80	24098-U	
30	1.0	80	24045-U	
60	1.0	80	24047	
100	1.0	80	24213-U	
30	2.0	40	24215-U	
60	2.0	40	24216-U	
30	5.0	16	24296	
60	5.0	16	24297	
0.53mm ID FUSED SILICA				
15	0.10	1325	25360	
30	0.10	1325	25361	
15	0.50	265	25314	
30	0.50	265	25315	
60	0.50	265	25382	
15	1.0	133	25416	
30	1.0	133	25417	
15	1.5	88	25302-U	
30	1.5	88	25303	
60	1.5	88	25388	
15	3.0	44	25340	
30	3.0	44	25341-U	
60	3.0	44	25348	
15	5.0	27	25344	
30	5.0	27	25345-U	
60	5.0	27	25349	

SPB-5

The low phenyl content, 5%, improves thermal stability of the phase, while still providing essentially a boiling point elution order, and a slight increase in selectivity, especially for aromatic compounds.

This column meets USP G27 and G36 requirements.

Operating Conditions: Chemically compatible with water and other injection solvents. Sensitive to strong inorganic acids and bases. Columns can be rinsed.

Phase: bonded; poly(5% diphenyl/
95% dimethylsiloxane)

Temp. Limits: -60°C to 320°C

McReynolds Nos.: x' y' z' u' s' = 19 74 64 93 62

LENGTH (m)	D _i (μm)	BETA	CAT. NO.	PRICE
0.10mm ID FUSED SILICA				
15	0.10	250	24341	
0.20mm ID FUSED SILICA				
15	0.20	250	24165-U	
30	0.20	250	24166	
60	0.20	250	24167	
12	0.33	152	24234-U	
0.25mm ID FUSED SILICA				
15	0.25	250	24032	
30	0.25	250	24034	
60	0.25	250	24036	
15	1.0	63	24033	
30	1.0	63	24035	
60	1.0	63	24037	
0.32mm ID FUSED SILICA				
15	0.25	320	24101-U	
30	0.25	320	24048	
60	0.25	320	24050	
30	0.50	160	24360	
15	1.0	80	24100-U	
30	1.0	80	24049	
60	1.0	80	24051	
0.53mm ID FUSED SILICA				
15	0.50	265	25316	
30	0.50	265	25317	
60	0.50	265	25383	
30	1.0	133	25420-U	
15	1.5	88	25304	
30	1.5	88	25305-U	
60	1.5	88	25389	
15	3.0	44	25342	
30	3.0	44	25343	
60	3.0	44	25350	
15	5.0	27	25346	
30	5.0	27	25347	
60	5.0	27	25351	

SE-30 and SE-54

The SE-54 column meets USP G36 requirements.

LENGTH (m)	D _i (μm)	BETA	CAT. NO.	PRICE
SE-30, 0.25mm ID FUSED SILICA				
30	0.25	250	24004-U	
SE-54, 0.25mm ID FUSED SILICA				
30	0.25	250	24001	

Capillary GC Other Columns

PTE-5/QTM - meets or exceeds performance specifications of US EPA Methods 625, 1625, 8270, and QTM protocols. Low bleed, recommended for use with GC/MS systems.

Phase: bonded; poly(5% diphenyl/95% dimethylsiloxane)
Temp. Limits: -60°C to 320°C
McReynolds Nos.: x' y' z' u' s' = 19 74 64 93 62

LENGTH (m)	D _i (μm)	BETA	CAT. NO.	PRICE
PTE-5				
0.25mm ID Fused Silica				
30	0.25	250	24135-U	
0.32mm ID Fused Silica				
30	0.25	320	24143	
30	0.32	250	24214	
30	1.0	80	24159	

PTE-5 QTM

0.53mm ID Fused Silica	15	0.50	265	25355
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MDN-1 - Nonpolar methylsilicone column that separates analytes according to boiling point. The bonded polymer matches the polarity of nonbonded phases SE-30 and SP-2100, and of bonded phase SPB-1.

Phase: bonded; poly(dimethylsiloxane)
Temp. Limits: -60°C to 320°C
Similar Phases: SPB-1, DB-1, ULTRA-1, RTx-1, CP-SIL-5CB

LENGTH (m)	D _i (μm)	BETA	CAT. NO.	PRICE
0.25mm ID Fused Silica				
30	0.25	250	24258	
30	1.0	63	24259	
0.32mm ID Fused Silica				
30	0.25	320	24299	
30	1.0	80	24300-U	

MDN-5 - The low phenyl content (5%) improves the thermal stability of the phase, while still providing essentially a boiling point elution order, and a slight increase in selectivity, especially for aromatic compounds.

Phase: bonded; poly(5% diphenyl/95% dimethylsiloxane)
Temp. Limits: -60°C to 320°C
Similar Phases: DB-5MS, HP-5MS, PTE-5, XTI-5

LENGTH (m)	D _i (μm)	BETA	CAT. NO.	PRICE
0.25mm ID Fused Silica				
30	0.25	250	24096	
0.32mm ID Fused Silica				
30	0.25	320	24097	
30	0.32	250	24203	
30	1.0	80	24204-U	

MDN-5S - These nonpolar columns feature very low bleed, and excellent inertness for active compounds. High sensitivity and integrity due to a better signal-to-noise ratio.

Phase: bonded and crosslinked; (5% phenyl) methylpolysiloxane
Temp. Limits: 0.25 and 0.32mm ID: -60°C to 325/350°C
0.53mm ID: -60°C to 300/320°C
Similar Phases: DB-5MS, HP-5MS, PTE-5, RTx-5MS, ULTRA-2

LENGTH (m)	D _i (μm)	BETA	CAT. NO.	PRICE
0.25mm ID Fused Silica				
30	0.10	625	24378	
15	0.25	250	24377-U	
30	0.25	250	24384	
60	0.25	250	24392	
30	0.50	125	24379	
30	1.0	63	24385-U	
0.32mm ID Fused Silica				
30	0.25	320	24386	
60	0.25	320	24394	
30	0.50	160	24393	
30	1.0	80	24387-U	
0.53mm ID Fused Silica				
30	1.5	88	25474	

MDN-12 - Low polarity and unique selectivity make these columns ideal for confirmational analyses and for separating active compounds, pesticides, herbicides, PCBs, and PAHs.

Phase: bonded and crosslinked; proprietary
Temp. Limits: 30°C to 340/360°C
Similar Phase: DB-XLB

LENGTH (m)	D _i (μm)	BETA	CAT. NO.	PRICE
0.25mm ID Fused Silica				
30	0.25	250	24388	
60	0.25	250	24396	
0.32mm ID Fused Silica				
30	0.25	320	24390-U	
60	0.25	320	24398	
30	1.0	80	24391	

MDN-35 - These low polarity columns have exceptional inertness for active compounds. They are ideal for confirmational analyses.

Phase: bonded and crosslinked; (35% phenyl) methylpolysiloxane
Temp. Limits: 50°C to 340/360°C
Similar Phases: AT-35, DB-35MS, RTx-35, SPB-35

LENGTH (m)	D _i (μm)	BETA	CAT. NO.	PRICE
0.25mm ID Fused Silica				
30	0.25	250	24382-U	
0.32mm ID Fused Silica				
30	0.25	320	24383-U	

Operating Conditions For All Columns On This Page Chemically compatible with water and other injection solvents. Sensitive to strong inorganic acids and bases. Columns can be rinsed.

Capillary GC Capillary Column Equivalents

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General Purpose Column Equivalency (Listed in order of increasing Phase Polarity)

	AGILENT / J&W	ALLTECH	CHROMPACK	MACHERY-NAGEL	QUADREX	RESTEK	SGE	PACKED COLUMN EQUIVALENT
SPB-Octyl	—	—	—	—	—	—	—	Squalane
Equity-1 / SPB-1	HP-1 / DB-1	AT-1000	CP-Sil5CB	Optima 1	007-1	RTx-1	BP-1	SE-30, SP-2100
Equity-5 / SPB-5	HP-5, HP-Ultra 2 / DB-5	AT-5	CP-Sil 8CB	Optima 5	007-2	RTx-5	BP-5	SE-54, SE-52, OV-73
SPB-20	—	AT-20	—	—	007-20	RTx-20	—	OV-7
SPB-1701	HP-1701 / DB-1701	AT-1701	CP-Sil19CB	Optima 1701	007-1701	RTx-1701	BP-10	OV-1701
SPB-35	HP-35 / DB-35	AT-35	—	—	007-11	RTx-35	BPX-35	OV-11
SP-2250	HP-50, HP-17 / DB-17	AT-50	CP-Sil 24CB	Optima 17	007-17	RTx-50	—	OV-17
SPB-17	HP-50, HP-17 / DB-17	AT-50	CP-Sil 24CB	Optima 17	007-17	RTx-50	—	OV-17, SP-2250
SPB-50	HP-50 / DB-17	AT-50	CP-Sil 24CB	—	—	RTx-50	—	OV-17, SP-2250
PAG	—	—	—	—	—	—	—	Plurionics F68
SUPELCO WAX 10	HP-Wax, HP-INNOWax / DB-WAX, DB-WAXetr	AT-Wax	CP-Wax 58CB	Permabond CW 20M	007-CW	Stabilwax	BP-20	Carbowax 20M
SPB-1000	HP-FFAP / DB-FFAP	AT-1000	CP-Wax 58CB	Permabond FFAP	007-FFAP	Stabilwax-DA	BP-21	SP-1000, OV-351
Nukol	HP-FFAP / DB-FFAP	AT-1000	CP-Wax 58CB	Permabond FFAP	007-FFAP	Stabilwax-DA	BP-21	SP-1000, OV-351
SPB-225	HP-225 / DB-225	AT-225	CP-Sil 43CB	Optima 225	007-225	RTx-225	BP-225	OV-225
SP-2330	DB-23	AT-Silar	CP-Sil 84	—	007-23	RTx-2330	BPX-70	SP-2330
SP-2380	HP-23 / DB-23	—	CP-Sil 88	—	—	RTx-2330	—	—
SP-2340	—	—	CP-Sil 88	—	—	RTx-2330	—	SP-2340

Specially Tested Column Equivalency

	AGILENT / J&W	ALLTECH	CHROMPACK	MACHERY-NAGEL	QUADREX	RESTEK	SGE
Chiral	—	—	—	—	—	—	—
α-DEX	HP Chiral / Cyclodex-B	Chiraldex-B	CP-Chirasil	LIPODEX A HYDRODEX	—	RT-βDEX	Cydex B
β-DEX	—	—	DEX CB	—	—	—	—
γ-DEX 120	—	—	—	LIPODEX E	—	RT-DEX	—
Environmental	—	—	—	—	—	—	—
Equity-5 / PTE-5	HP-5MS	AT-5	CP-Sil 8CB	Permabond SE-54-HKW	007-2	XTI-5	BPX-5
SP-2331	DB-Dioxin	—	—	—	—	—	—
SPB-608	HP-608 / DB-608	AT-Pesticides	—	—	007-608	—	BP608
SPB-624	HP-624 / DB-624, DB-VRX	AT-624	CP-Sil 13CB	Optima 624	007-624	RTx-624	BP624
SPB-HAP	—	—	—	—	—	—	—
Sup-Herb	—	—	—	—	—	—	—
VOCOL	HP-VOC / DB-502.2	—	—	—	—	RTx-502.2	—
GC/MS	—	—	—	—	—	—	—
Equity-1 / MDN 1	HP-1MS	—	CP-Sil 1CB MS	Optima 1MS	—	—	—
Equity-5 / MDN-5	HP-5MS	—	CP-Sil 8CB MS	Optima 5MS	—	—	BPX5
Equity-5 / MDN-5S	HP-5TA / DB-5MS, DB-625	—	—	—	—	RTx-5Sil MS	—
Food & Beverage / Fatty Acids	—	—	—	—	—	—	—
Omegawax	—	—	—	—	—	Famewax	—
SAC-5	—	—	—	—	—	—	—
SP-2380	HP-23 / DB-23	—	CP-Sil 88	—	—	RTx-2330	—
SP-2560	—	—	—	—	—	—	—
SPB-PUFA	—	—	—	—	—	—	—
Petroleum / Industrial Chemical	—	—	—	—	—	—	—
Carbowax Amine	HP-BasicWax/ DB-CAM	—	CP-Wax 51	FS-CW 20 M-AM	—	Stabilwax-DB	—
Carboxen-1006 PLOT	—	—	—	—	—	—	—
Carboxen-1010 PLOT	—	—	—	—	—	—	—
Mol Sieve 5A PLOT	HP-PLOT MoleSieve / GS-Molesieve	—	CP-MoleSieve 5A	—	—	RT-MoleSieve 13X	—
Petrocol 2887	DB-2887	—	CP-SimDist CB	—	007-1-10V-1.0F	RTx-2887	—
Petrocol DH	DB-Petro 100	AT-Petro	CP-Sil PONA	Permabond P-100	—	RTx1-PONA	BP-1 PONA
Petrocol DH 150	—	—	—	—	—	—	—
Petrocol DH 50.2	HP-PONA	—	Squalane	—	007-1-50-0.5F	—	BP-1 PONA
Petrocol DH Octyl	—	—	—	—	—	—	—
Petrocol EX2887	DB-2887	—	CP-SimDist CB	—	007-1-10V-1.0F	—	—
PTA-5	—	—	—	Optima-5 Amine	—	RTx-5 Amine	—
SCOT	—	—	—	—	—	—	—
SPB-1 Sulfur	—	AT-Sulfur	—	—	—	—	—
Supel-Q PLOT	HP-PLOT Q / GS-Q	—	PoraPLOT Q	—	—	RT-Q PLOT	—
TCEP	—	—	TCEP	—	—	RTx-TCEP	—
Pharmaceutical	—	—	—	—	—	—	—
OVI-G43	HP-624 / DB-624	AT-624	—	—	007-624	RTx-624	BP624

Order: 1.800.325.3010 Technical Service: 1.800.359.3041 Web: www.sigma-aldrich.com/supelco

Gas Chromatography

SUPELCO

Capillary GC Custom Columns

Custom Capillary GC Columns

The information below provides a general overview of the Supelco custom capillary GC capabilities. Supelco manufactures all custom capillary GC columns using our ISO 9001-registered processes to achieve the performance and reproducibility you expect. Custom capillary GC columns are tested for k' and coating efficiency.

To order your custom column, call and provide us with the phase, film thickness, ID, length, and any additional details or special needs.

Custom Fused Silica Capillary Columns

PHASES AVAILABLE*

Carbowax Amine	SE-30	SPB-35
Equity-1	SE-54	SPB-225
Equity-5	SP-2100	SPB-608
Nukol	SP-2250	SPB-624
Omegawax	SP-2330	SPB-1000
OS-138	SP-2331	SPB-1701
OV-1	SP-2340	SPB-Octyl
OV-1701	SP-2380	SPB-PUFA
OVI-G43	SPB-1	SUPELCOWAX 10
PAG	SPB-1 Sulfur	TCEP
PTA-5	SPB-5	VOCOL
PTE-5	SPB-20	
SAC-5	SPB-50	

DIMENSIONS AVAILABLE

Inside diameter: Available in 0.10mm, 0.20mm, 0.25mm, 0.32mm, 0.53mm, and 0.75mm sizes.

Film thickness: Varies from 0.05µm to 7.0µm. Actual film thickness will depend on the phase and column ID selected.

Column length: Varies from 1m to 100m. Actual lengths will depend on the column ID selected and cage style selected.

Cage: The 0.10mm to 0.25mm ID columns are placed on our standard 6"/15cm cage. All others are placed on our standard 8"/20cm cage. The smaller HP6850 column cage is also available upon request.

Custom PLOT Capillary Columns

PHASES AVAILABLE*

Carboxen 1006	Alumina KCl	G-45
Carboxen 1010	Alumina Sodium Sulfate	HayeSep N
Mol Sieve 5A	Tenax	HayeSep R
Supel-Q		

DIMENSIONS AVAILABLE

Inside diameter: Available in 0.32mm & 0.53mm sizes.

Column length: Varies from 1m to 60m.

Custom SCOT Capillary Columns

PHASES AVAILABLE*

Bentone 34	MBMA	TCEP
BMEA	Squalene	UCON LB-550-X
DEGS		

DIMENSIONS AVAILABLE

Inside diameter: Available in .020 inch (.50mm) size.

Column length: Varies from 1 foot to 100 feet.

* Additional phases may be available. Please inquire if you require a phase not listed.

Supelco Capillary Columns for Agilent 6850 (HP6850)

Now, any Supelco capillary GC column can be made compatible with your Agilent/HP 6850 instrument by simply specifying code "PRO100060" when you order.

Until now, transferring your lab method to the Agilent/HP 6850 GC meant specifying different column part numbers because of the different size of the 6850 column cage. This meant risking a method change because you changed the purchasing information. This is no longer necessary.

- No method headaches – your Supelco capillary will fit perfectly in your 6850 instrument.
- No new part numbers to remember – just specify "PRO100060" when you order any Supelco capillary.
- No delay – columns are shipped within 24 hours.

If you are changing a lab method to a 6850, you can continue to use the same Supelco capillary column and ordering information. To order any Supelco capillary column on a 6850 cage, simply ask for order code PRO100060, and then provide the Supelco column ordering information already in your method.

Upon receipt of your order, we will coil the stock or custom Supelco capillary column on an authentic Agilent Technologies 6850 GC cage and ship it within 24 hours. Transferring column ordering information from lab to 6850 methods has never been easier!

DESCRIPTION	CAT. NO.	PRICE
Supelco capillary in an Agilent/HP 6850 column cage	PRO100060	No extra charge!



Capillary GC Fused Silica Tubing

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Fused Silica Tubing

Use as transfer lines, guard columns, or retention gaps, or to make your own columns.

Tubing can be coupled through fused silica or glass GlasSeal connectors. If necessary, use polyimide glue to provide a permanent seal. These products are listed in the index.

TUBING TREATMENT	APPLICATION	MAX. TEMP
Untreated	General purposes, where high inertness is not necessary	360°C
Nonpolar (methyl)	Low polarity solvents (e.g., alkanes, carbon disulfide, ethers)	360°C
Intermediate Polarity (phenyl/methyl)	Intermediate polarity solvents (e.g., acetone, methylene chloride, toluene)	360°C
Polar (PEG)	Polar solvents (e.g., acetonitrile, methanol, water)	260°C



ID (mm)	CAT. NO.	UNTREATED PRICE	DEACTIVATED TUBING NONPOLAR CAT. NO.	DEACTIVATED TUBING NONPOLAR PRICE	DEACTIVATED TUBING INTERMEDIATE POLARITY CAT. NO.	DEACTIVATED TUBING INTERMEDIATE POLARITY PRICE	DEACTIVATED TUBING POLAR CAT. NO.	DEACTIVATED TUBING POLAR PRICE
3 x 1-meter lengths								
0.10	25700-U		25704		25705		25710	
0.20	—	—	—	—	25706		—	—
0.25	24024		24025		25707		25712	
0.32	25702		24058		25708		—	—
0.53	25703		25307		25709		25714	
3-meter length								
0.10	25715		25720-U		—	—	—	—
0.20	—	—	—	—	25726		—	—
0.25	25717		25722		25727		—	—
0.32	25718		25723		25728		—	—
0.53	25719		25724		25729		25734	
5-meter length								
0.10	25735		25740-U		25745-U		—	—
0.20	—	—	25741		25746		—	—
0.25	25737		25742		25747		—	—
0.32	25738		25743		25748-U		25752-U	
0.53	25739		25744		25339 ¹		25753	
15-meter length								
0.20	—	—	25755		—	—	25763	
0.25	24059		25756		25760-U		—	—
0.32	24062		25757		25761		25765	
0.53	25306		25758		25762		25766	
30-meter length								
0.20	25767		25768-U		25772		—	—
0.25	—	—	25769-U		—	—	25777	
0.32	24063		25770-U		25774		25778	
0.53	25308		25771		25775-U		25779	
60-meter length								
0.20	—	—	—	—	25786		—	—
0.25	24061		25783		25787		—	—
0.32	24064		25784		25788-U		25792	
0.53	25781		25785		25789		—	—

¹ Deactivated according to USP 467.

Order: 1.800.325.3010 Technical Service: 1.800.359.3041 Web: www.sigma-aldrich.com/supelco

Gas
Chromatography

SUPELCO

Capillary GC

Test Mixes for Capillary Columns

Column Test Mixes

After you install a column in your system, use a test mix to make sure you haven't also installed some surprises, such as large fragments in the column, or small leaks. Weekly tests thereafter will keep little problems from growing into big problems. Test is an inexpensive aid to obtaining high quality chromatograms.

Acidity Test Mix

Even a highly efficient column can adsorb acidic or basic compounds. To determine the acid/base affinity of your column, simply inject this mix and compare peak heights (Grob & Grob, Chromatographia 421, 1971). Instructions included. 0.05% each component in methylene chloride.

DESCRIPTION	QTY.	CAT. NO.	PRICE
Acidity Test Mix	2mL	48255-U	

Hydrocarbon Test Mix

An ideal mix for checking column installation when you use a capillary column in a modified packed column system. Also used to determine theoretical plates. C12-C17 hydrocarbons, 500-2000µg/mL in chloroform.

DESCRIPTION	QTY.	CAT. NO.	PRICE
Hydrocarbon Test Mix	2mL	48244	

Isothermal Test Mixes

Use these mixes to indicate column efficiency, leaks, dead volume, and sample adsorption. Each mix includes simple, detailed instructions.

Isothermal Test Mix Kit - 2mL each of the three isothermal test mixes described below.

Nonpolar Column Test Mix - For all nonpolar phases. 500µg/mL each component in methylene chloride.

2-Octanone	Undecane (C11)
Decane (C10)	2,6-Dimethylaniline
1-Octanol	Dodecane (C12)
2,6-Dimethylphenol	Tri decane (C13)

Intermediate Polarity Column Test Mix- For SPB-20, SPB-35, and other intermediate polarity phases. 500µg/mL each component in methylene chloride.

Decane (C10)	Dodecane (C12)
2-Octanone	2,6-Dimethylphenol
Undecane (C11)	Tridecane (C13)
1-Octanol	2,6-Dimethylaniline
	Tetradecane (C14)

Polar Column Test Mix - For SUPELCOWAX 10, SP-1000, and other polar phases. 500µg/mL each component in methylene chloride.

2-Octanone	Octadecane (C18)
Pentadecane (C15)	2,6-Dimethylaniline
1-Octanol	2,6-Dimethylphenol
Hexadecane (C16)	Eicosane (C20)
Heptadecane (C17)	

DESCRIPTION	QTY.	CAT. NO.	PRICE
Isothermal Test Mix Kit	3x3mL	47303	
Nonpolar Column Test Mix	2mL	47300-U	
Intermediate Polarity Column Test Mix	2mL	47301	
Polar Column Test Mix	2mL	47302	

Methane Standard

Use 40µL injections of this dilute methane standard (100ppm in helium) for more accurate flow measurements than with smaller quantities of more concentrated methane. Use with the methane syringe, syringe adapter, and pressure regulator listed. Disposable cylinder.

DESCRIPTION	QTY.	CAT. NO.	PRICE
100ppm in helium	14L	307200	
Accessories for Methane Standard			
Hamilton 1725N Syringe		20705	
Syringe Adapter		609010	
Pressure Regulator		513010	

Programmed Test Mix

This mix is for a sensitive, temperature programmed analysis (Grob, et al., J. Chromatogr. 156: 1, 1978) that tests a column's affinity for many compounds. Prepared at concentrations convenient for setting split ratios and sample sizes. In use, on-column quantities are those recommended by Grob, et al. Each component at quantity indicated, in methylene chloride.

2,3-Butanediol	530µg/mL
Decane	280µg/mL
1-Octanol	360µg/mL
2,6-Dimethyl phenol	320µg/mL
Nonanal	400µg/mL
Undecane	290µg/mL
2-Ethylhexanoic acid	380µg/mL
2,6-Dimethylaniline	320µg/mL
C10 acid methyl ester	420µg/mL
Dicyclohexylamine	310µg/mL
C11 acid methyl ester	420µg/mL
C12 acid methyl ester	410µg/mL

DESCRIPTION	QTY.	CAT. NO.	PRICE
Programmed Test Mix	2mL	47304	

Capillary GC Test Mixes for Capillary Columns

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Test Mixes for Specific Phases

For popular Supelco capillary columns. Each mix contains active components and inactive hydrocarbons.

COLUMN TEST MIX	COMPOSITION	QTY.	CAT. NO.	PRICE
Carbowax Amine	500µg/mL each component in methyl tert-butyl ether. n-Octylamine n-Nonylamine n-Pentadecane (C15) n-Decylamine n-Hexadecane (C16) n-Benzylamine n-Heptadecane (C17) Tri-n-hexylamine n-Octadecane (C18) 2,6-Dimethylaniline 2,4-Dimethylaniline n-Eicosane (C20)	1mL	48278	
α-DEX 120	500µg/mL each component in methylene chloride Nonane (C9) p-Xylene m-Xylene Decane (C10) (+)-1,2-Propanediol ¹ (-)-1,2-Propanediol ¹ Undecane (C11)	1mL	48013	
β-DEX 120	500µg/mL each component in methylene chloride Nonane (C9) (±)-3,3-Dimethyl-2-butanol Decane (C10) (±)-3-Methyl-2-heptanone 1-Hexanol Undecane (C11)	1mL	48028	
OMEGAWAX TEST MIXES				
Omegawax ²	Approximately 50mg FAMES/mL in hexane	1mL	48476	
Menhaden Oil ²	Approximately 100mg FAMES/mL in hexane	1mL	48473	
PETROCOL TEST MIXES				
Petrocol DH	Each hydrocarbon (v/v) in cyclohexane n-Hexane, 1%, Benzene, 1%, n-Heptane, 1% Toluene, 1% n-Octane, 1% m-Xylene, 4% p-Xylene, 2% n-Nonane, 1%	1mL	48872	
Petrocol D2887	1% each component in n-octane n-Hexadecane n-Octadecane	6 x 1mL	48889	
EQUITY/SPB TEST MIXES				
Equity/SPB Thin Film For 0.10µm film Equity/SPB columns	500µg/mL each component in cyclohexane n-Octadecane (C18) Cetyl alcohol n-Nonadecane (C19) n-Eicosane (C20)	1mL	48273	
Equity/SPB Thick Film For 3µm and 5µm film Equity/SPB columns	500µg/mL each component in methylene chloride n-Nonane (C9) 2-Octanone n-Decane (C10) 1-Octanol 2,6-Dimethylphenol 2,6-Dimethylaniline n-Dodecane (C12) n-Tridecane (C13)	1mL	48275-U	
SPB-50	500µg/mL each component in methylene chloride n-Decane (C10) n-Undecane (C11) 2-Octanone 1-Octanol n-Dodecane (C12) n-Tridecane (C13) 2,6-Dimethylphenol 2,6-Dimethylaniline n-Pentadecane (C15)	1mL	48280-U	
SUP-HERB COLUMN TEST MIXES				
Herbicides Mix 1	100µg/mL each component in ethyl acetate Eptam Sutan Tillam (Pebulate) Ordram (Molinate) Ro-Neet (Cycloate) Treflan (Trifluralin) Atrazine Terbacil Sencor Bromacil Paarlan (Isopropalin) GOAL (Oxyfluorfen) Velpar (Hexazinone)	1mL	49136	
Herbicides Mix 2	100µg/mL each component in ethyl acetate Vernam Propachlor Balan Simazine Propazine Tolban (Profluralin) Dual Prowl Oxadiazon	1mL	49138-U	

¹ Total concentration 1000µg/mL for the two isomers.

² The Omegawax Column Test Mix and the Menhaden Oil standard are based on naturally occurring mixtures of fatty acids –relative peak sizes may vary from lot to lot.

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