

# GC Columns

Unique Column Coating Technology



**BISCHOFF**  
CHROMATOGRAPHY

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Bischoff	USP Nomenclature Phase Composition	Restek	Agilent	Varian/ Chrompack	SGE	Phenomenex	Machery- Nagel	Supelco
KB-1/ KB-HT 1	G1, G2, G38 100% dimethyl polysiloxane	Rtx-1	HP-1, DB-1	CP Sil 5 CB	BP-1	ZB-1	Optima-1	SPB-1
KB-MS1	G1, G2, G38 100% dimethyl- polysiloxane (low bleed)	Rxi-1ms Rxi-1HT	HP-1ms UI, DB-1ms UI, HP-1, HP-1ms, DB-1, DB-1ms, Ultra- 1DB-1HT	VF-1ms, CP-Sil 5, CP Sil 5 CB Low Bleed/MS VF-1HT	BP-1	ZB-1, ZB-1ms ZB-1HT	Optima-1, Optima-1ms, Optima-1ms Accent	SPB-1, Equity-1
KB-5/ KB-MS 5/ KB-HT5	G27, G36  5% diphenyl, 95% dimethyl- polysiloxane	Rtx-5 Rxi-5ms Rxi-5Sil MS Rxi-5HT	HP-5, DB-5  HP-5ms UI,  HP-5ms,  Ultra-2 DB-5ms UI,  DB-5ms  DB-5HT	CP Sil 8 CB CP-Sil 8,  VF-5ms,  Low Bleed/MS VF-5HT	BP-5  BPX-5	ZB-5  ZB-5ms  ZB-5HT	Optima-5  Optima-5ms  Accent	SPB-5  Equity-5  SLB-5ms
KB-20	G28, G32  20% diphenyl, 80% dimethyl- polysiloxane	Rtx-20						SPB-20
KB-35	G42  35% diphenyl, 65% dimethyl- polysiloxane	Rtx-35 Rxi-35Sil MS	HP-35, DB-35 DB-35ms	VF-35ms	BPX-35, BPX-608  BP-35	ZB-35 MR2	Optima-35ms	SPB-35, SPB-608
KB-17/ KB-17MS	G3 50% phenyl, 50% methyl polysiloxane	Rtx-50 Rxi-17  Rxi-17Sil MS	HP-50 HP-17, DB-17, DB-608, HP-50+  DB-17ms, HP-17, DB-17	CP-Sil 24 CB  VF-17ms,	AT-50  BPX-50	ZB-50	Optima-17  Optima-17ms	SPB-50



Bischoff	USP Nomenclature Phase Composition	Restek	Agilent	Varian/ Chrompack	SGE	Phenomenex	Machery- Nagel	Supelco
KB-65HT	G17 65% diphenyl, 35% dimethyl polysiloxane	Rtx-65						
KB-624/ KB-1301	G43 6% cyanopropyl phenyl, 94% dimethylpolysiloxane	Rxi-624Sil MS Rtx-1301 Rtx-624	HP-624, DB-624 HP-1301,	VF-624ms CP-1301, VF-1301ms, VF-624ms	BP-624	ZB-624	Optima-1301, Optima-624	SPB-1301
KB-1701	G46 14% cyanopropyl phenyl,86% dimethyl polysiloxane	Rtx-1701	HP-1701, PAS-1701, DB-1701	CP Sil 19 CB, VF-1701ms	BP-10	ZB-1701, ZB-1701P	Optima-1701	SPB-1701
KB-225	G7, G19 50% cyanopropyl, 50% phenylmethyl polysiloxane	Rtx-225	HP-225, DB-225	CP Sil 43 CB	BP-225		Optima-225	SPB-225
			<b>Unique Column</b>					
KB-CW/ KB-CWR	G14, G15, G16, G20, G39 polyethylene glycol	Rtx-Wax Stabilwax	HP-Wax, DB- WaxInno- wax	CP Wax 52 CB VF-WAX MS	BP-20	ZB-Wax ZB-Wax Plus	Optima Wax	Supelcowax- 10
KB-FFAP	G35 nitroterephthalic-acid modified polyethylene glcol	Stabilwax- DA	HP-FFAP	CP Wax 52 CB, VF-WAX MS	BP-20	ZB-Wax ZB-Wax Plus	Optima Wax	Supelcowax- 10

# KB-1 Dimethylpolysiloxane

Non Polar

The non-polar KB-1 dimethylpolysiloxane phase, which separates compounds according to boiling point, is probably the most frequently used phase type in GC. Bonding and crosslinking this general purpose GC phase increases the resistance to degradation by rinsing, large solvent injections and the deposition of non-volatiles. The KB-1 phase offers excellent efficiency and thermal stability. In addition, this non-polar phase is less susceptible to oxidation and hydrolysis than phases incorporating more polar functional groups.

## KB-1 Operating Temperature Range

Film Thickness	Temperature Range
up to 1.0 $\mu$ m	-50° C to 350° C
2.0 to 5.0 $\mu$ m	up to 300° C
6.0 to 8.0 $\mu$ m	up to 280° C
9.0 to 12.0 $\mu$ m	up to 240° C
12.0 $\mu$ m and above	up to 200° C

## KB-1 Standard Film Columns

I.D.	10M.	15M.	25M.	30M.	50M.	60M.	75M.	100M.	Standard Film Thickness Range
0.10mm		Yes	Yes	Yes					0.1 - 0.5 $\mu$ m
0.18mm	Yes	Yes	Yes	Yes					0.1 - 0.5 $\mu$ m
0.25mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 1.0 $\mu$ m
0.32mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 5.0 $\mu$ m
0.53mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 8.0 $\mu$ m

\*Note: KB-1 is also available in TFC (thick film columns) are ideal for low molecular weight analyses performed on packed columns.

## KB-1 General area of use

Boiling point column, general purpose: hydrocarbons, solvents, waxes, pharmaceuticals, flavors, etc.



# KB-5 (5% PHENYL) METHYLPOLYSILOXANE

Non Polar

The non-polar KB-5 phenyl dimethylpolysiloxane phase, which separates compounds according to boiling point, is probably the most frequently used phase type in GC. Bonding and crosslinking this general purpose GC phase increases the resistance to degradation by rinsing, large solvent injections and the deposition of non-volatiles. The KB-5 phase offers excellent efficiency and thermal stability. In addition, this non-polar phase is less susceptible to oxidation and hydrolysis than phases incorporating more polar functional groups.

## KB-5 Operating Temperature Range

Film Thickness	Temperature Range
up to 1.0 $\mu$ m	-50° C to 350° C
2.0 to 5.0 $\mu$ m	up to 300° C
6.0 to 8.0 $\mu$ m	up to 280° C
9.0 to 12.0 $\mu$ m	up to 240° C
12.0 $\mu$ m and above	up to 200° C

## KB-5 SPECIFICATIONS

I.D.	10M.	15M.	25M.	30M.	50M.	60M.	75M.	100M.	Standard Film Thickness Range
0.10mm	Yes	Yes	Yes	Yes					0.1 - 0.5 $\mu$ m
0.18mm	Yes	Yes	Yes	Yes					0.1 - 0.5 $\mu$ m
0.25mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 1.0 $\mu$ m
0.32mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 5.0 $\mu$ m
0.53mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 8.0 $\mu$ m

\*Note: KB-5 is also available in TFC (thick film columns) are ideal for low molecular weight analyses performed on packed columns.

## KB-5 General area of use

Boiling point column, general purpose: hydrocarbons, solvents, waxes, pharmaceuticals, flavors, etc.

# KB-MS 1

Non Polar

The non-polar KB-MS 1 dimethylpolysiloxane phase, which separates compounds according to boiling point, is probably the most frequently used phase type in GC. Bonding and crosslinking this general purpose GC phase increases the resistance to degradation by rinsing, large solvent injections and the deposition of non-volatiles. The KB-MS 1 phase offers excellent efficiency and thermal stability. In addition, this non-polar phase is less susceptible to oxidation and hydrolysis than phases incorporating more polar functional groups.

## KB-MS 1 Operating Temperature Range

Film Thickness	Temperature Range
up to 0.5 $\mu$ m	-50° C to 350° C

## KB-MS 1 SPECIFICATIONS

I.D.	10M.	15M.	25M.	30M.	50M.	60M.	75M.	100M.	Standard Film Thickness Range
0.10mm	Yes	Yes	Yes	Yes					0.1 - 0.5 $\mu$ m
0.18mm	Yes	Yes	Yes	Yes					0.1 - 0.5 $\mu$ m
0.25mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 0.5 $\mu$ m

\*Note: KB-MS 1 is also available in TFC (thick film columns) are ideal for low molecular weight analyses performed on packed columns.

## KB-MS 1 General area of use

Boiling point column, general purpose: hydrocarbons, solvents, waxes, pharmaceuticals, flavors, etc.



# KB-MS 5

Non Polar

The non-polar KB-MS 5 phenyl dimethylpolysiloxane phase, which separates compounds according to boiling point, is probably the most frequently used phase type in GC. Bonding and crosslinking this general purpose GC phase increases the resistance to degradation by rinsing, large solvent injections and the deposition of non-volatiles. The KB-MS 5 phase offers excellent efficiency and thermal stability. In addition, this non-polar phase is less susceptible to oxidation and hydrolysis than phases incorporating more polar functional groups.

## KB-MS 5 Operating Temperature Range

Film Thickness	Temperature Range
up to 0.5 $\mu$ m	-50° C to 350° C

## KB-MS 5 SPECIFICATIONS

I.D.	10M.	15M.	25M.	30M.	50M.	60M.	75M.	100M.	Standard Film Thickness Range
0.10mm	Yes	Yes	Yes	Yes					0.1 - 0.5 $\mu$ m
0.18mm	Yes	Yes	Yes	Yes					0.1 - 0.5 $\mu$ m
0.25mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 1.0 $\mu$ m
0.32mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 1.0 $\mu$ m

\*Note: KB-MS 5 is also available in TFC (thick film columns) are ideal for low molecular weight analyses performed on packed columns.

## KB-MS 5 General area of use

Boiling point column, general purpose: hydrocarbons, solvents, waxes, pharmaceuticals, flavors, etc.

# KB-HT 1

Non Polar

The non-polar KB-HT 1 dimethylpolysiloxane phase, which separates compounds according to boiling point, is probably the most frequently used phase type in GC. Bonding and crosslinking this general purpose GC phase increases the resistance to degradation by rinsing, large solvent injections and the deposition of non-volatiles. The KB-HT 1 phase offers excellent efficiency and thermal stability. In addition, this non-polar phase is less susceptible to oxidation and hydrolysis than phases incorporating more polar functional groups.

## KB-HT 1 Operating Temperature Range

Film Thickness	Temperature Range
up to 0.25 $\mu$ m	-50° C to 350° C

## KB-HT 1 SPECIFICATIONS

I.D.	10M.	15M.	25M.	30M.	50M.	60M.	75M.	100M.	Standard Film Thickness Range
0.10mm	Yes	Yes	Yes	Yes					0.1 - 0.25 $\mu$ m
0.18mm	Yes	Yes	Yes	Yes					0.1 - 0.25 $\mu$ m
0.25mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 0.25 $\mu$ m
0.32mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 0.25 $\mu$ m
0.53mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 0.25 $\mu$ m

\*Note: KB-HT 1 is also available in TFC (thick film columns) are ideal for low molecular weight analyses performed on packed columns.

## KB-HT 1 General area of use

Boiling point column, general purpose: hydrocarbons, solvents, waxes, pharmaceuticals, flavors, etc.



# KB-HT 5

Non Polar

The non-polar KB-HT 5 phenyl dimethylpolysiloxane phase, which separates compounds according to boiling point, is probably the most frequently used phase type in GC. Bonding and crosslinking this general purpose GC phase increases the resistance to degradation by rinsing, large solvent injections and the deposition of non-volatiles. The KB-HT 5 phase offers excellent efficiency and thermal stability. In addition, this non-polar phase is less susceptible to oxidation and hydrolysis than phases incorporating more polar functional groups.

## KB-HT 5 Operating Temperature Range

Film Thickness	Temperature Range
up to 0.25 $\mu$ m	-50° C to 350° C

## KB-HT 5 SPECIFICATIONS

I.D.	10M.	15M.	25M.	30M.	50M.	60M.	75M.	100M.	Standard Film Thickness Range
0.10mm	Yes	Yes	Yes	Yes					0.1 - 0.25 $\mu$ m
0.18mm	Yes	Yes	Yes	Yes					0.1 - 0.25 $\mu$ m
0.25mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 0.25 $\mu$ m
0.32mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 0.25 $\mu$ m
0.53mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 0.25 $\mu$ m

\*Note: KB-HT 5 is also available in TFC (thick film columns) are ideal for low molecular weight analyses performed on packed columns.

## KB-HT 5 General area of use

Boiling point column, general purpose: hydrocarbons, solvents, waxes, pharmaceuticals, flavors, etc.

# KB-10

Slightly Polar

KB-10 (10% phenyl substitution, respectively) are the Bischoff designations of phenyldimethylpolysiloxane phases. The phenyl substitutions contribute to the "induced dipole" selectivity of these phases. A column coated with either phase displays excellent efficiency and thermal stability. These phases provide an excellent alternative for drug and environmental pollutant analyses where greater retention of aromatic compounds is necessary.

## KB-10 Operating Temperature Range

Film Thickness	Temperature Range
up to 1.0 $\mu$ m	-50° C to 350° C
2.0 to 5.0 $\mu$ m	up to 280° C
6.0 to 8.0 $\mu$ m	up to 260° C

## KB-10 SPECIFICATIONS

I.D.	10M.	15M.	25M.	30M.	50M.	60M.	75M.	100M.	Standard Film Thickness Range
0.10mm	Yes	Yes	Yes	Yes					0.1 - 0.5 $\mu$ m
0.18mm	Yes	Yes	Yes	Yes	Yes				0.1 - 0.5 $\mu$ m
0.25mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 1.0 $\mu$ m
0.32mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 5.0 $\mu$ m
0.53mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 5.0 $\mu$ m

## KB-10 General area of use

Volatiles.



KB-20 (20% phenyl substitution, respectively) are the Bischoff designations of phenyldimethylpolysiloxane phases. The phenyl substitutions contribute to the "induced dipole" selectivity of these phases. A column coated with either phase displays excellent efficiency and thermal stability. These phases provide an excellent alternative for drug and environmental pollutant analyses where greater retention of aromatic compounds is necessary.

## KB-20 Operating Temperature Range

Film Thickness	Temperature Range
up to 1.0 $\mu$ m	-50° C to 350° C
2.0 to 5.0 $\mu$ m	up to 280° C
6.0 to 8.0 $\mu$ m	up to 260° C

## KB-20 SPECIFICATIONS

I.D.	10M.	15M.	25M.	30M.	50M.	60M.	75M.	100M.	Standard Film Thickness Range
0.10mm	Yes	Yes	Yes	Yes					0.1 - 0.25 $\mu$ m
0.18mm	Yes	Yes	Yes	Yes	Yes				0.1 - 0.5 $\mu$ m
0.25mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 1.0 $\mu$ m
0.32mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 5.0 $\mu$ m
0.53mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 5.0 $\mu$ m

## KB-20 General area of use

Volatiles.

KB-624, KB-608 and KB-502, Cyanopropylphenyl Methylpolysiloxanes  
 KB-608, KB-624, and KB-502 offer three variations of cyanopropylphenyl substitutions on a methylpolysiloxane backbone. These phases have been specifically designed for the analysis of volatile organic compounds and pesticides as specified in many EPA Methods including 502.1, 502.2, 503.1, 524.1, 524.2, 601, 602, 608, 624, 8010, 8011, 8015, 8020, 8240, and 8260. By using KB-502 and KB-624 phase types on 0.53mm I.D. columns, the entire range of volatile compounds, including gases, can be analyzed beginning at ambient temperatures. KB-608, KB-624 and KB-502 Cyanopropylphenyl Methylpolysiloxane columns are most commonly requested in the following column I.D.'s and column lengths. The film thickness ranges are noted in the chart below.

## KB-624 Operating Temperature Range

Film Thickness	Temperature Range
up to 1.0 $\mu$ m	-50° C to 325° C
2.0 to 5.0 $\mu$ m	up to 280° C

## KB-624 SPECIFICATIONS

I.D.	30M.	50M.	60M.	75M.	100M.	105M.	Standard Film Thickness Range
0.25mm	Yes	Yes	Yes				1.0 - 3.0 $\mu$ m
0.32mm	Yes	Yes	Yes	Yes			1.0 - 5.0 $\mu$ m
0.53mm	Yes	Yes	Yes	Yes	Yes	Yes	0.5 - 5.0 $\mu$ m

## KB-624 General area of use

EPA Method applications: volatiles and semi-volatiles in drinking water, ground water, pesticides, herbicides, etc.

# KB-1301

Slightly Polar

The KB-1301 is a (6% cyanopropylphenyl) methylpolysiloxane phase. Overall, KB-1301 is a low polarity phase which exhibits excellent thermal stability. The cyanopropyl (permanent dipole) and the phenyl (polarizable) substituents provide a specific selectivity for polar and polarizable compounds. More of a boiling point phase than KB-1701 (14% cyanopropyl phenyl methylpolysiloxane), the KB-1301 exhibits less retention of polyaromatic compounds than KB-17 (50% phenyl methylpolysiloxane).

Nitrogen-containing herbicides, various types of pesticides, drugs and other heteroatom-containing compounds are good candidates for separation using this phase.

As part of the KB Series of Bonded Phases, the KB-1301 can withstand large solvent injections and rinsing to remove insoluble impurities.

## KB-1301 Operating Temperature Range

Film Thickness	Temperature Range
up to 1.0 $\mu$ m	-30° C to 320° C
2.0 to 3.0 $\mu$ m	up to 300° C

## KB-1301 SPECIFICATIONS

I.D.	10M.	15M.	25M.	30M.	50M.	60M.	Standard Film Thickness Range
0.10mm	Yes	Yes	Yes	Yes			0.1 - 0.25 $\mu$ m
0.18mm	Yes	Yes	Yes	Yes	Yes		0.1 - 0.5 $\mu$ m
0.25mm	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 1.0 $\mu$ m
0.32mm	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 3.0 $\mu$ m
0.53mm	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 3.0 $\mu$ m

## KB-1301 General area of use

PCB's, pesticides, herbicides



KB-608, KB-624, and KB-502, Cyanopropylphenyl Methylpolysiloxanes

KB-608, KB-624, and KB-502 offer three variations of cyanopropylphenyl substitutions on a methylpolysiloxane backbone. These phases have been specifically designed for the analysis of volatile organic compounds and pesticides as specified in many EPA Methods including 502.1, 502.2, 503.1, 524.1, 524.2, 601, 602, 608, 624, 8010, 8011, 8015, 8020, 8240, and 8260. By using KB-502 and KB-624 phase types on 0.53mm I.D. columns, the entire range of volatile compounds, including gases, can be analyzed beginning at ambient temperatures. KB-608, KB-624 and KB-502 Cyanopropylphenyl Methylpolysiloxane columns are most commonly requested in the following column I.D.'s and column lengths. The film thickness ranges are noted in the chart below.

## KB-502 Operating Temperature Range

Film Thickness	Temperature Range
up to 1.0 $\mu$ m	-50° C to 325° C
2.0 to 5.0 $\mu$ m	up to 280° C

## KB-502 SPECIFICATIONS

I.D.	30M.	50M.	60M.	75M.	100M.	105M.	Standard Film Thickness Range
0.25mm	Yes	Yes	Yes				1.0 - 3.0 $\mu$ m
0.32mm	Yes	Yes	Yes	Yes			1.0 - 5.0 $\mu$ m
0.53mm	Yes	Yes	Yes	Yes	Yes	Yes	0.5 - 5.0 $\mu$ m

## KB-502 General area of use

EPA Method applications: volatiles and semi-volatiles in drinking water, ground water, pesticides, herbicides, etc.

# KB-608

Slightly Polar

KB-608, KB-624, and KB-502, Cyanopropylphenyl Methylpolysiloxanes  
KB-608, KB-624, and KB-502 offer three variations of cyanopropylphenyl substitutions on a methylpolysiloxane backbone. These phases have been specifically designed for the analysis of volatile organic compounds and pesticides as specified in many EPA Methods including 502.1, 502.2, 503.1, 524.1, 524.2, 601, 602, 608, 624, 8010, 8011, 8015, 8020, 8240, and 8260. By using KB-502 and KB-624 phase types on 0.53mm I.D. columns, the entire range of volatile compounds, including gases, can be analyzed beginning at ambient temperatures.

## KB-608 Operating Temperature Range

Film Thickness	Temperature Range
up to 1.0 $\mu$ m	-50° C to 325° C
2.0 to 5.0 $\mu$ m	up to 280° C

## KB-608 SPECIFICATIONS

I.D.	30M.	50M.	60M.	75M.	100M.	105M.	Standard Film Thickness Range
0.25mm	Yes	Yes	Yes				1.0 - 3.0 $\mu$ m
0.32mm	Yes	Yes	Yes	Yes			1.0 - 3.0 $\mu$ m
0.53mm	Yes	Yes	Yes	Yes	Yes	Yes	0.5 - 3.0 $\mu$ m

## KB-608 General area of use

EPA Method applications: volatiles and semi-volatiles in drinking water, ground water, pesticides, herbicides, etc.

# KB-17

Mid Polar

KB-17 is a 50% phenyl methylpolysiloxane phase. The presence of the 50% phenyl groups increases the overall "polarity" of the phase and enhances the selectivity of induced dipole interactions resulting in greater retention of aromatic solutes. The KB-17 phase is widely used as an EPA Method confirmation column and provides for efficient separations of PAHs, and biomedical samples such as drugs, sugars and steroids.

## KB-17 Operating Temperature Range

Film Thickness	Temperature Range
up to 1.0 $\mu$ m	40° C to 350° C
2.0 to 3.0 $\mu$ m	up to 300° C

## KB-17 SPECIFICATIONS

I.D.	10M.	15M.	25M.	30M.	50M.	60M.	75M.	100M.	Standard Film Thickness Range
0.10mm	Yes	Yes	Yes						0.1 - 0.25 $\mu$ m
0.18mm	Yes	Yes	Yes	Yes	Yes				0.1 - 0.5 $\mu$ m
0.25mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 1.0 $\mu$ m
0.32mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 3.0 $\mu$ m
0.53mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 3.0 $\mu$ m

## KB-17 General area of use

Pesticides, phenols, pharmaceuticals, FAMES. etc



# KB-35

Mid Polar

KB-35 is the Bischoff designation for a (35% phenyl) dimethylpolysiloxane phase. This phase is a compromise between KB-20 and KB-17 in phenyl content. It is a popular phase for drug analyses; and like the entire series of phenyl-substituted phases, columns coated with the KB-35 can be rinsed to remove non-volatile and high boiling contaminants.

## KB-35 Operating Temperature Range

Film Thickness	Temperature Range
up to 1.0 $\mu$ m	-50° C to 300° C
2.0 to 5.0 $\mu$ m	up to 280° C

## KB-35 SPECIFICATIONS

I.D.	10M.	15M.	25M.	30M.	50M.	60M.	75M.	100M.	Standard Film Thickness Range
0.10mm	Yes	Yes	Yes						0.1 - 0.25 $\mu$ m
0.18mm	Yes	Yes	Yes	Yes	Yes				0.1 - 0.5 $\mu$ m
0.25mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 1.0 $\mu$ m
0.32mm	Yes	Yes	Yes	Yes	Yes	Yes			0.1 - 5.0 $\mu$ m
0.53mm	Yes	Yes	Yes	Yes	Yes	Yes			0.1 - 5.0 $\mu$ m

## KB-35 General area of use

PCB's, pesticides, herbicides, amines

KB-1701 is a (14% cyanopropylphenyl) methylpolysiloxane phase. The cyanopropyl functional groups provide a permanent dipole selectivity different from the induced dipole interactions of the phenyl groups. The overall "polarity" of this phase remains nominal when compared to the more highly cyanopropyl substituted phases such as KB-225. The KB-1701 phase is often used for solvents, pharmaceuticals, derivitized sugars and many environmental applications.

## KB-1701 Operating Temperature Range

Film Thickness	Temperature Range
up to 1.0 $\mu$ m	-20° C to 280° C
2.0 to 3.0 $\mu$ m	up to 260° C

## KB-1701 SPECIFICATIONS

I.D.	10M.	15M.	25M.	30M.	50M.	60M.	75M.	100M.	Standard Film Thickness Range
0.10mm	Yes	Yes	Yes						0.1 - 0.25 $\mu$ m
0.18mm	Yes	Yes	Yes	Yes	Yes				0.1 - 0.5 $\mu$ m
0.25mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 1.0 $\mu$ m
0.32mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 3.0 $\mu$ m
0.53mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 5.0 $\mu$ m

## KB-1701 General area of use

Pesticides, phenols, pharmaceuticals, FAMES. etc

# KB-50HT

Mid Polar

KB-50HT is a 50% phenyl methylpolysiloxane phase. The presence of the 50% phenyl groups increases the overall "polarity" of the phase and enhances the selectivity of induced dipole interactions resulting in greater retention of aromatic solutes. The KB-50HT phase is widely used as an EPA Method confirmation column and provides for efficient separations of PAHs, and biomedical samples such as drugs, sugars and steroids.

## KB-50HT Operating Temperature Range

Film Thickness	Temperature Range
up to 1.0 $\mu$ m	-40° C to 325° C
2.0 to 3.0 $\mu$ m	up to 300° C

## KB-50HT SPECIFICATIONS

I.D.	10M.	15M.	25M.	30M.	50M.	60M.	75M.	100M.	Standard Film Thickness Range
0.10mm	Yes	Yes	Yes						0.1 - 0.25 $\mu$ m
0.18mm	Yes	Yes	Yes	Yes	Yes				0.1 - 0.5 $\mu$ m
0.25mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 1.0 $\mu$ m
0.32mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 3.0 $\mu$ m
0.53mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 3.0 $\mu$ m

## KB-50HT General area of use

Pesticides, phenols, pharmaceuticals, FAMES. etc



# KB-65HT

Mid Polar

The KB-65HT phases represent a (65% phenyl) methylpolysiloxane phase composition. They are a companion phase to the KB-17 (50% phenyl methylpolysiloxane), but the additional 15% phenyl substitution provides greater selectivity toward compounds exhibiting induced dipole effects. This enhanced selectivity is most evident in the analysis of triglycerides where the resolution is "fine tuned" over that of the 50% phenyl substitution. The KB-65HT is a bonded phase which possesses excellent thermal stability and hence can be used routinely for high temperature analyses. Columns coated with the KB-65HT phase type are ideal for the analysis of biofuel/biodiesel total glycerin and methyl esters under ASTM Method D6584-00.

## KB-65HT Operating Temperature Range

Film Thickness	Temperature Range
up to 0.25µm	40° C to 390° C

## KB-65HT SPECIFICATIONS

I.D.	10M.	15M.	25M.	30M.	50M.	60M.	Standard Film Thickness Range
0.10mm	Yes	Yes	Yes				0.1 - 0.25µm
0.18mm	Yes	Yes	Yes	Yes	Yes		0.1 - 0.25µm
0.25mm	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 0.25µm
0.32mm	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 0.25µm

## KB-65HT General area of use

Triglycerides, food oils, biodiesel

KB-225 is the Bischoff designation for a 50% cyanopropylphenyl methylpolysiloxane. This phase possesses both permanent dipole interactions (nitrile) as well as induced dipole (phenyl) and dispersion interactions. It has unique selectivity for derivitized compounds such as fatty acids and carbohydrates. Non-volatile residues can be rinsed from the column to restore column performance. Bischoff KB-225 columns have been cited in a number of estrogen assay methods. The most commonly used KB-225 column configurations are 15M. x 0.25mm x 0.25 $\mu$ m film, our # KB-225-15-0.25F, and 30M. x 0.25mm x 0.25 $\mu$ m film, our # KB-225-30-0.25F.

### KB-225 Operating Temperature Range

Film Thickness	Temperature Range
up to 1.0 $\mu$ m	40° C to 240° C
2.0 to 3.0 $\mu$ m	up to 200° C

### KB-225 SPECIFICATIONS

I.D.	10M.	15M.	25M.	30M.	50M.	60M.	75M.	100M.	Standard Film Thickness Range
0.10mm	Yes	Yes	Yes						0.1 - 0.25 $\mu$ m
0.18mm	Yes	Yes	Yes	Yes	Yes				0.1 - 0.5 $\mu$ m
0.25mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 1.0 $\mu$ m
0.32mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 1.0 $\mu$ m
0.53mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 3.0 $\mu$ m

### KB-225 General area of use

Carbohydrates, alditol acetates, FAMES

# KB-CW

Polar

KB-CW and KB-CWR are the Bischoff designations for an ethylene glycol/siloxane copolymer. This polymer can be used to separate compounds at temperatures not normally associated with polyethylene glycol (PEG, Carbowax™) phases. Both the lower and upper temperature limits of traditional Carbowax type columns are extended with this phase. In addition, Bischoff offers a modified version of the KB-CW phase, designated KB-CWR, which incorporates an anti-oxidant moiety to better withstand oxygen degradation. The KB-CWR phase offers increased thermal stability and longer column lifetimes. See additional information below. The hydrogen bonding interactions of the KB-CW and KB-CWR phases makes them well suited for the analysis of polar compounds such as solvents, flavors, perfumes, and essential oils. These phases are not recommended for the analysis of mixtures containing silylating reagents.

KB-CWR, OXYGEN-RESISTANT PHASE:

Columns coated with bondable PEG and, even more so with traditional Carbowax 20M, deteriorate in the presence of oxygen. It has been necessary, therefore, to maintain an oxygen-free chromatographic system. To lower the costs of maintaining such a system and to improve the chromatographic properties of the PEG-type columns, we offer the oxygen-resistant KB-CWR phase type. KB-CWR is a polyethylene glycol (PEG) phase, similar to our KB-CW phase, but which incorporates an anti-oxidant moiety to better withstand oxygen exposure and the resultant degradation. The KB-CWR also offers increased thermal stability and longer column lifetimes.

## KB-CW Operating Temperature Range

Film Thickness	Temperature Range
up to 1.0 $\mu$ m	20° C to 280° C
2.0 to 5.0 $\mu$ m	up to 240° C

## KB-CW SPECIFICATIONS

I.D.	10M.	15M.	25M.	30M.	50M.	60M.	75M.	100M.	Standard Film Thickness Range
0.10mm	Yes	Yes	Yes						0.1 - 0.25 $\mu$ m
0.18mm	Yes	Yes	Yes	Yes	Yes				0.1 - 0.5 $\mu$ m
0.25mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 1.0 $\mu$ m
0.32mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 3.0 $\mu$ m
0.53mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 5.0 $\mu$ m

## KB-CW General area of use

Alcohols, free acids, essential oils, solvents, aromatics, BTEX, flavors and fragrances



# KB-CWR

Polar

KB-CW and OXYGEN-RESISTANT KB-CWR, POLYETHYLENE GLYCOL (PEG) POLYMER KB-CW and KB-CWR are the Bischoff designations for an ethylene glycol/siloxane copolymer. This polymer can be used to separate compounds at temperatures not normally associated with polyethylene glycol (PEG, Carbowax™) phases. Both the lower and upper temperature limits of traditional Carbowax type columns are extended with this phase. In addition, Bischoff offers a modified version of the KB-CW phase, designated KB-CWR, which incorporates an anti-oxidant moiety to better withstand oxygen degradation. The KB-CWR phase offers increased thermal stability and longer column lifetimes. See additional information below. The hydrogen bonding interactions of the KB-CW and KB-CWR phases makes them well suited for the analysis of polar compounds such as solvents, flavors, perfumes, and essential oils. These phases are not recommended for the analysis of mixtures containing silylating reagents.

KB-CWR, OXYGEN-RESISTANT PHASE:

Columns coated with bondable PEG and, even more so with traditional Carbowax 20M, deteriorate in the presence of oxygen. It has been necessary, therefore, to maintain an oxygen-free chromatographic system. To lower the costs of maintaining such a system and to improve the chromatographic properties of the PEG-type columns, we offer the oxygen-resistant KB-CWR phase type. KB-CWR is a polyethylene glycol (PEG) phase, similar to our KB-CW phase, but which incorporates an anti-oxidant moiety to better withstand oxygen exposure and the resultant degradation. The KB-CWR also offers increased thermal stability and longer column lifetimes.

## KB-CW Operating Temperature Range

Film Thickness	Temperature Range
up to 1.0 $\mu$ m	20° C to 280° C
2.0 to 5.0 $\mu$ m	up to 240° C

## KB-CW SPECIFICATIONS

I.D.	10M.	15M.	25M.	30M.	50M.	60M.	75M.	100M.	Standard Film Thickness Range
0.10mm	Yes	Yes	Yes						0.1 - 0.25 $\mu$ m
0.18mm	Yes	Yes	Yes	Yes	Yes				0.1 - 0.5 $\mu$ m
0.25mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 1.0 $\mu$ m
0.32mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 3.0 $\mu$ m
0.53mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 5.0 $\mu$ m

## KB-CW General area of use

Alcohols, free acids, essential oils, solvents, aromatics, BTEX, flavors and fragrances

# KB-FFAP

Polar

KB-FFAP is a nitroterephthalic acid modified polyethylene glycol (PEG) polymer. This bonded acidic phase is ideal for the analysis of aqueous solutions of free fatty acids as well as fatty acid methyl esters. As with the KB-CW (and KB-CWR) polyethylene glycol phases, KB-FFAP is not recommended for the analysis of silylating reagents.

## KB-FFAP Operating Temperature Range

Film Thickness	Temperature Range
up to 1.0 $\mu$ m	20° C to 280° C
2.0 to 5.0 $\mu$ m	up to 240° C

## KB-FFAP SPECIFICATIONS

I.D.	10M.	15M.	25M.	30M.	50M.	60M.	75M.	100M.	Standard Film Thickness Range
0.10mm	Yes	Yes	Yes						0.1 - 0.25 $\mu$ m
0.18mm	Yes	Yes	Yes	Yes	Yes				0.1 - 0.5 $\mu$ m
0.25mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 1.0 $\mu$ m
0.32mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 3.0 $\mu$ m
0.53mm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.1 - 3.0 $\mu$ m

## KB-FFAP General area of use

Alcohols, aldehydes, ketones, acids

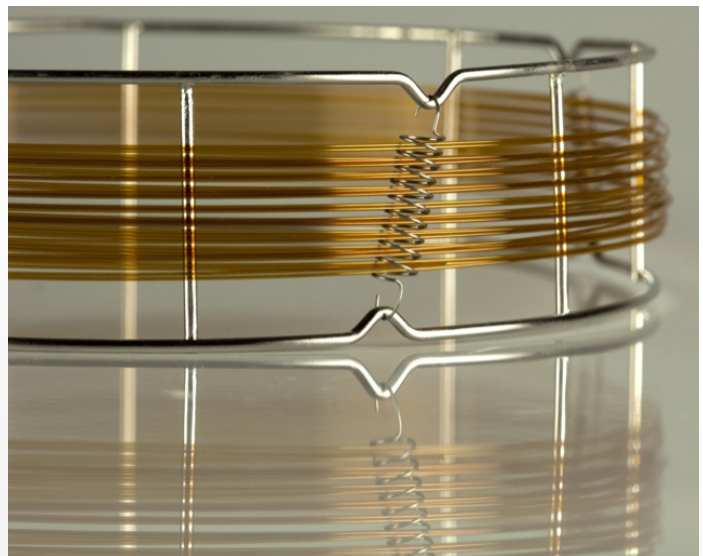
KB-P5, MOLECULAR SIEVE 5Å. The analysis of permanent gases is an important application in the petrochemical industry. Bischoff offers the KB-P5 molecular sieve PLOT capillary column as a replacement for the traditional packed molecular sieve column. A capillary PLOT column offers the advantage of a faster turn-around time between analyses as well as the added benefit of faster regeneration of the adsorbent layer. O<sub>2</sub>, N<sub>2</sub>, CO, and CH<sub>4</sub> are typically separated in six minutes. In addition, the important O<sub>2</sub>/Ar separation can be achieved using this column at sub-ambient temperatures. We use a proprietary process which insures column-to-column reproducibility and a unique binding agent which eliminates adsorbent layer degradation which can cause contamination of valves and detectors.

## KB-P5 Operating Temperature Range

Film Thickness	Temperature Range
25µm	-50° C to 300° C

## KB-P5 SPECIFICATIONS

I.D.	30M.	Standard Film Thickness Range
0.53mm	Yes	25µm



## KB-P5 General area of use

Permanent gases



KB-PA, ALUMINA/KCL Bischoff offers a AL<sub>2</sub>O<sub>3</sub> PLOT column which is ideal for the analysis of C1 to C5 hydrocarbons. The KB-PA columns offer a maximum temperature of 200°C and are rinsable with methanol or water.

### KB-PA SPECIFICATIONS

I.D.	15M.	30M.	50M.	60M.	Standard Film Thickness Range
0.32mm		Yes	Yes		8μm
0.53mm	Yes	Yes	Yes	Yes	15μm



### KB-PA General area of use

Light hydrocarbons

KB-PQ, DIVINYLBENZENE COPOLYMER Bischoff offers a KB-PQ-type PLOT column coated with divinylbenzene copolymer which is ideal for the analysis of natural gas, refinery gas, amines, and sulfur gases. The KB-PQ columns offer a maximum temperature of 290°C and are solvent rinsable.

### KB-PQ SPECIFICATIONS

I.D.	15M.	30M.	Standard Film Thickness Range
0.32mm	Yes	Yes	15 $\mu$ m
0.53mm		Yes	30 $\mu$ m



### KB-PQ General area of use

Light hydrocarbons, gases

KB-PU, DIVINYLBENZENE COPOLYMER Bischoff offers a Q-type PLOT column coated with divinylbenzene copolymer which is ideal for the analysis of natural gas, refinery gas, amines, and sulfur gases. The KB-PU columns offer a maximum temperature of 290°C and are solvent rinsable.

### KB-PU SPECIFICATIONS

I.D.	15M.	30M.	Standard Film Thickness Range
0.32mm	Yes	Yes	15 $\mu$ m
0.53mm		Yes	30 $\mu$ m



### KB-PU General area of use

Light hydrocarbons, gases





Germany: **BISCHOFF Chromatography GmbH** Böblinger Str. 23, 71229 Leonberg  
Phone: +49-7152-6064-0 Web: [www.bischoff365.com](http://www.bischoff365.com)

India: **B&W Separation India Pvt. Ltd.** (Unit of Bischoff chromatography Germany)  
H. No. 262/A1/B1, Daulatnagar, Paud Road, Bhugaon, Pune - 412115.  
Office No. +91 78877 29825 [bwteamindia@gmail.com](mailto:bwteamindia@gmail.com), [info@bwseparation.com](mailto:info@bwseparation.com) [www.bwseparation.com](http://www.bwseparation.com)