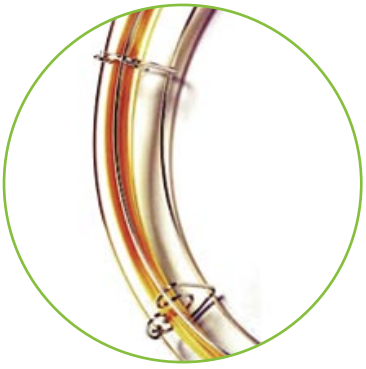
KONIK CAPILLARY COLUMNS

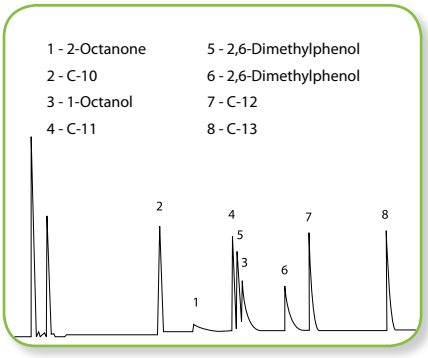


All of KONIK columns are manufactured according to a strict established protocol, and within the ISO 9001:2008 quality rules.

- Step 1: Hydrothermal treatment
- Step 2: Deactivation process
- Step 3: Wetting, bonding and crosslinking
- Step 4: Quality control

Step 1: Hydrothermal Treatment

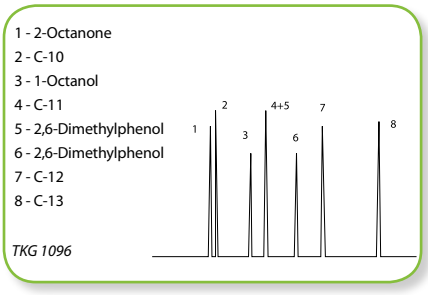
KONIK starts its manufacturing process with the selection of the best possible fused silica tubing. This tube presents an extremely reduced tolerance of internal diameters and has a polyimide outer coating capable of withstanding the highest temperatures without loss of its flexible mechanical characteristics. Each one of the batches of silica used in the process is conveniently characterized as an essential step to set the Hydrothermal Treatment conditions (Fig. 1) that will give rise to a surface containing a high and constant density of silanol groups, which will later be properly deactivated.
This treatment is indispensable, as the different capillary tubing manufactured batches present a very low and irregularly distributed silanol group density due to the high temperature manufacturing process (~2000ºC).



Verification of Hydrothermal Treatment

Step 2: Deactivation Process

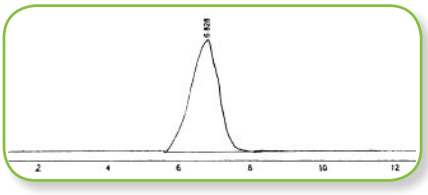
The deactivation process, which is different for each type of stationary phase, is carefully controlled (Fig. 2), ensuring that the tubing surface has acquired the necessary chemical inertness and surface tension in order to be able to proceed with the second stage of stationary phase deposition. This step also facilitates the introduction of specific functional groups on the tubing wall which are very useful for the later binding of the stationary phase or to give the columns a given end point characteristics.



Deactivation Stage (Intermediate Test)

Step 3: Wetting, bonding and crosslinking

Stationary phase selection for optimum wetting of the column is a critical point in regards to column quality. The column manufacturer uses extremely pure polymers for its phases, in order to guarantee that our columns will respond to the requirements that our customers expect in terms of efficiency, reproducibility, stability and minimal bleeding.
The polymers used are carefully fractionated to eliminate the low molecular weight components and trace catalyst. This results in a higher thermal stability and lower bleeding. Then, these polymers are tested by means of spectroscopic (FTIR, UV, NMR), chromatographic (GPC) techniques and by differential thermal analysis.
Fig. 3 shows the molecular exclusion chromatography of the polymer TRB-5 with its corresponding thermogravimetric curve in Fig. 4.
The crosslinking and bonding of the stationary phase is achieved by avoiding the use of peroxides which are the cause of many of the problems related to residual activity due to phase degradation and thermal instability exhibited in numerous imported columns.
The fact that a given stationary phase is crosslinked and/or chemically bonded to the capillary tube inner wall allows, if necessary, the recovery or regeneration of an accidentally contaminated column by washing it with the adequate series of solvents.

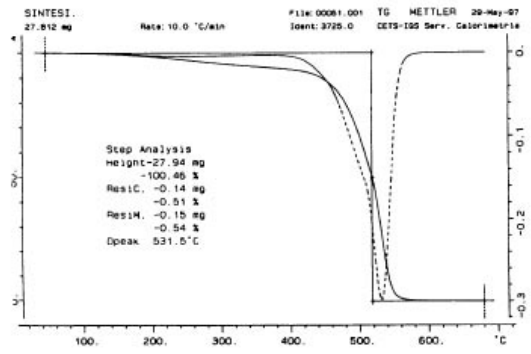


GPC Chromatogram of KAP-5 polymer

Step 4. Quality Control

Select proven quality

When you buy a KONIK capillary column you receive a product designed and manufactured with the aim to help you solve your analytical problems and which meets all of our quality criteria.
At the same time you obtain from our Technical Department at KONIK the assurance that we will be at your side to help you with all the problems and concerns experience in the lab.
Each column is individually tested and the accompanying test data is the proof that the column meets our quality specifications and thus we expect it to meet your demands. Each one of the columns obtained by this process is rigorously controlled by means of a strict Quality Control Test (Fig. 5 and 6), which ensures that you will receive a guaranteed quality product.

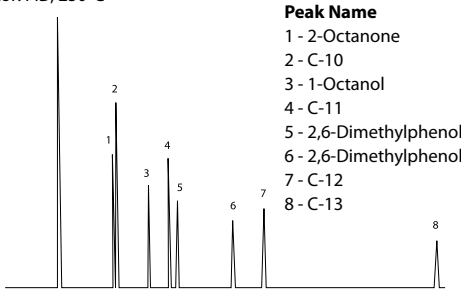


DTA Curve of KAP-5 polymer

Stationary Phase

The selection of the ideal column for a given analysis may look like a complex problem since we need to be right on the selection of the polarity of the stationary phase as well as column length, internal diameter and film thickness.
The polarity of the stationary phase is chosen depending on the kind of compounds you wish to separate. Non polar phases, such as KAP-1 and KAP-5, separate compounds by their boiling points. Intermediate polarity phases such as KAP-WAX, KAP-1701, combine retention by boiling point with the more selective interaction through hydrogen bridges or dipolar moments, etc., and thus provide a higher selectivity. The principal mechanisms of polar phases such as KAP-CN100 (Cyanosilicone with 100% of cyano propyl groups) lie in the dipole-dipole interactions between the functional groups of the stationary phase and those from the substances to be separated. These type of phases retain polar compounds more than non polar ones.
In general, non polar phases are more thermally stable than the polar phases. In other words, the higher the column polarity, the lower its thermal stability. Most of the KONIK columns are cross-linked, which results in high thermal stability. The cross-linking in a stationary phase produces slight changes in the physicochemical characteristics of the phase as well as in its polarity relative to the uncross-linked phase. Thus KONIK also offers in its catalog columns with non bonded phases that show the selectivity of the original phase (for instance KAP-SE30, KAP-SE54, KAP-20M, etc).

Column: **KAP-5** 60m x 0.25mm ID x 0.25µm.
Carrier gas: He, 25 psi.
Oven:110ºC (Isothermal).
Injection: 1µl, split. (1:100:250ºC)
Concentration: Aprox. 5ng of each compound on column
Detector: FID, 250ºC



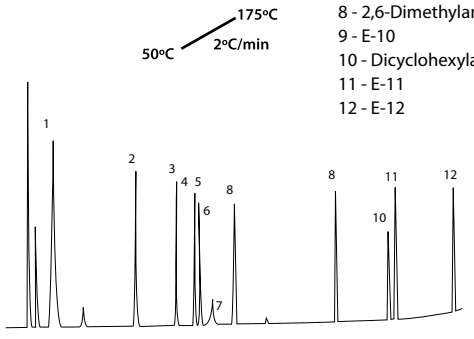
Peak Name
1 - 2-Octanone
2 - C-10
3 - 1-Octanol
4 - C-11
5 - 2,6-Dimethylphenol
6 - 2,6-Dimethylphenol
7 - C-12
8 - C-13

QUALITY CONTROL TEST

Length

The efficiency of a chromatographic column (number of theoretical plates per meter) is a function of its length. The standard length used for most of the separations is 25-30 meters. With this length one can obtain a high efficiency with relative short times of analysis. Columns of 15m are used for rapid control analyses, reaction monitoring, etc. as well as for the chromatography of high molecular weight substances while columns of 50-60 m, 100 m or 150 m are used for very complex samples.
KONIK exclusively has a 150 m column for detail analyses of petroleum and essential oil hydrocarbons. As a general rule, we can say that in a constant temperature chromatographic analysis, the number of theoretical plates and analysis time are directly proportional to the column length while resolution is directly proportional to the square root of the theoretical plates. Thus, we need to take into account that when we double column length, its resolution only increases by 40% whereas analysis time doubles.

Column: **KAP-5** 30m x 0.25mm ID x 0.25µm.
Carrier gas: He, 12 psi.
Injection: 1µl, split. (1:100), 260ºC
Detector: FID, 280ºC



Peak Name
1 - 2,3-Butanediol
2 - C-10
3 - 1-Octanol
4 - 2,6-Dimethylphenol
5 - C-11
6 - Nonanal
7 - 2-Ethylexanoic acid
8 - 2,6-Dimethylanine
9 - E-10
10 - Dicyclohexylamine
11 - E-11
12 - E-12

GROB test

Internal Diameter

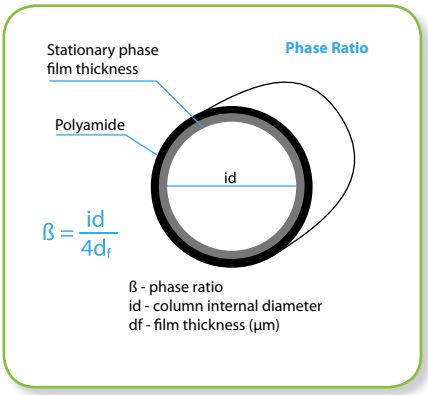
The column internal diameter is inversely proportional to its separation power. The smaller the diameter, the larger the efficiency and thus a higher resolution but at the same time the loading capacity decreases.
For samples containing a large number of substances where you may need a given resolution, it is recommended to use small internal diameter columns (0.20-0.25 mm) and for samples with a high range of concentrations higher internal diameter columns are recommended (0.32-0.53 mm) since these larger diameters allow for the injection of a higher sample amount.
Columns of 0.53 mm ID (semicapillary) have a loading capacity similar to that of packed columns, which they replace in many analyzes, with better resolution, higher chemical inertness and lower analysis time.
The 0.32-0-53 mm ID columns can be used with either the injector for capillary columns or with the packed column injector, due to the high flow-rates at which they can operate.
In the increasingly used GC-MS systems it is recommended to work with small ID columns (0.10mm, 0.15mm, 0.18mm, 0.20 mm and 0.22 mm) so as not to exceed the capacity of the vacuum system.
Recently, capillary columns of 0.1 mm ID have appeared on the market.
These generate high plate numbers or, in other words, to reduce analysis time without losing resolution. The high efficiency of these columns (7000-10000 plates/meter) allows the resolution of complex samples using shorter column lengths, thus with very short analysis times, with the resulting cost reduction for the laboratory. Evidently, their loading capacity is a limiting factor and in order to obtain the best performance from these columns we need to take into account instrumental factors (injector-detector).

Film Thickness

The film thickness of the stationary phase deposited inside the capillary column exerts an influence on the number of effective theoretical plates that can be obtained with the column for a given separation, on its loading capacity, on the bleed level and on the elution temperature of a compound.
A film thickness of 0.25-0.32 mm is the standard thickness allowing for a compromise between loading capacity and resolution; and for the injection of samples with a wide volatility range.
Thick films increase retention of the most volatile components whereas thin films provide faster elution at lower temperatures. As a general rule, thin films (0.1 µm) must be used for compounds with a high molecular weight such as triglycerides, antioxidants, etc., which have elution temperatures over 300°C. Thick films must be used for low boiling substances because thick films increase the interaction between the substances and the stationary phase. Specifically, 3-5 µm films are used to separate solvents, gases, and very volatile substances at room temperature or lower.
When the thickness of the stationary phase increases, thermal stability decreases, and thus the bleed level is higher which will limit the maximum operating temperature of the column.
The ß factor defines the relation between the column internal diameter and the stationary phase thickness, thereby helping you to select the most appropriate column for your analysis.
In addition, the ß factor allows for the easy exchange of columns since, for a given analysis with the same stationary phase, similar ß factors will result in the same or very similar retention times and capacity factors. Of course, this implies taking into account the column loading capacity (phase thickness and internal diameter).

ß Factor

ß	Column suitable for the separation of:
>400	High molecular weight compounds
100	- 400 All purpose use
<100	Volatile compounds of low molecular weight



Bleed Level

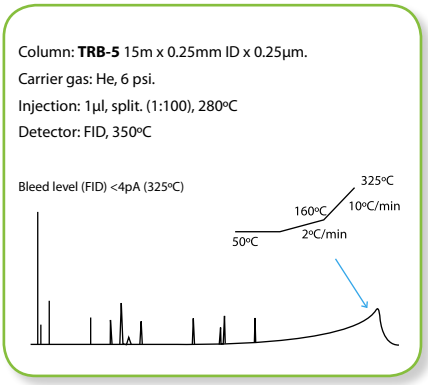
The bleed level of stationary phase from a capillary column is the parameter which will determine the level of sensitivity in a given assay. It is directly related to the amount of stationary phase in the column and thus with the film thickness. It also increases exponentially with temperature (Fig.7).
A low bleed level will allow you to work without problems with the whole range of modern high sensitivity detectors and at the same time will result in less contamination.
This will also allow the quantification of high boiling point or high molecular weight compounds which are analyzed by means of high temperature gradients.

Maximum Efficiency

All manufacturing stages for capillary columns have been optimized in order to be able to offer our customers columns of very high efficiency.

Maximum Reproducibility

When you select a KONIK column for your analyses you can be assured that each of the steps in the production process has been thoroughly controlled to ensure that there are no deviations from the established quality parameters. All of the steps incorporate the maximum possible automation procedures.
This translates into a high reproducibility level with regards to the chromatographic performance of our columns.



BLEED LEVEL (GROB TEST)

Inter Internal diameter (mm)	Theoretical Plates (N/m)
0,10	7.000 - 9.000
0,20	4.700 - 5.500
0,25	3.300 - 4.600
0,32	2.700 - 3.700
0,53	1.400 - 2.200

Wide Stationary Phase Selection

KONIK incorporates in its catalogue a selection of capillary columns prepared with the stationary phases most commonly used in the field of gas chromatography (see table below).

LIST OF KONIK CAPILLARY COLUMNS AND SIMILAR PERFORMANCE PHASE CHART									
KONIK	PHASE COMPOSITION	AGILENT	SUPELCO	RESTEK	VARIAN	SGE	ALLTECH	QUADREX	USP NOMENCL
KAP-1, KAP-1ht, KAP-1MS, KAP-SULFUR, KAP-PETRO, KAP50, 2PONA, KAP-2887	100% dimethyl polysiloxane	HP-1, HP101, ULTRA-1, DB-1, DB-1ht, DB-2887	SPB-1, EQUITY-1 SPB-1 SULFUR	Rtx-1, Rtx-2887	CP-SIL 5 CB CP-SIL 5 CB MS	BP-1	AT-1	007-1	G1, G2, G38
KAP-5, KAP-5ht, KAP-5MS, KAP-STEROL, KAP-5AMINE, KAP-G27, KAP-5625, KAP-G27	95% dimethyl - 5% diphenyl polysiloxane	HP-5, ULTRA-2, DB-5, DB5.625, DB-5ht, PAS-5	SPB-5, EQUITY-5 PTE-5, SAC-5, PTE-5QTM	Rtx-5, XTI-5, Rtx-5 MS	CP-SIL 8 CB	BP-5	AT-5	007-2	G27, G36
KAP-META.X5	95% dimethyl - 5% diphenyl polysilphenylene	HP-5TA, DB-5MS	MDN-5	Rtx-5Sil MS	CP-SIL 8 CB Low Bleed/MS	BPX-5	AT-5ms	007-5 MS	
KAP-1301, KAP-624, KAP-G43	6% cyanopropylphenyl-94% dimethyl polysiloxane	HP-1301, HP-624 DB-1301, DB-624	SPB-1301, OVI-43	Rtx-1301, Rtx-624		BPX-624	AT-624		G43
KAP-14	14% diphenyl-86% dimethyl polysiloxane				CP-SIL13CB				
KAP-20	20% diphenyl-80% dimethyl polysiloxane		SPB-20, VOCOL				AT-20	007-7	G28, G32
KAP-35	35% diphenyl-65% dimethyl polysiloxane	HP-35, DB-35	SPB-35	Rtx-35		BPX-35, BPX-608	AT-35	007-11	G42
KAP-1701	14% cyanopropylphenyl-86% dimethyl polysiloxane	HP-1701, PAS-1701, DB-1701	SPB-1701	Rtx-1701	CP-SIL19CB	BP-10	AT-1701	007-1701	
KAP-225	50% cyanopropylphenyl-50% dimethyl polysiloxane	HP-225, DB-225		Rtx-225	CP-SIL43CB	BP-225	AT-225	007-225	G7, G19
KAP-PAG	50% poluethylene - 50% polypropylengycol		PAG						
KAP-FFAP	treated polyethyleneglycol for acidic compounds	HP-FFAP, DB-FFAP	NUKOL, SP-1000	STABILWAX-DB	CP-WAX 58 CB	BP-21	AT-1000, FFAP	007-FFAP	G25, G35
KAP-50	50% diphenyl-50% dimethyl polysiloxane	HP-50+, DB-17, DB-608	SPB-50, SPB-2250	Rtx-50	CP-SIL 24 CB		AT-50	007-17	G3
KAP-50ht	50% diphenyl-50% dimethyl polysiloxane	DB-17ht		Rtx-65	TAB-CB			007-65HT	G17
KAP-F50	50% trifluoropropylmethyl polysiloxane	DB-210, DB-200		Rtx-200			AT-210	007-210	G6
KAP-WAX	100% polyethylenglycol	HP-20M, INNOWAX DB-WAX, DB-WAXetr	SUPEL-COWAX-10 Carbowax 20M	STABILWAX	CP-WAX 52 CB	BP-20	AT-WAX	007-CW	G14, G15, G16, G20, G39
KAP-WAX.DB	treated polyethylenglycol for basic compounds	CAM, HP-BasicWax	Carbowax-Amine		CP-WAX 51 CB				
KAP-META.WAX	100% polyethylenglycol	HP-WAX, DB-WAX			CP-WAX 57 CB				
KAP-WAX.OMEGA	100% polyethylenglycol		OMEGAWAX	FAMEWAX					
KAP-CN100	100% biscyanopropyl polysiloxane		SP-2340	Rt-2340	CP-SIL 88				
KAP-CRESOL	non bonded phase				CP-CRESOL				
KAP-17	50% diphenyl-50% dimethyl polysiloxane	HP-17							G3
Meta.VOC	bonded phase	DB-502.2, HP-VOC	VOCOL	Rtx-502.2					
KAP-608	bonded phase	HP-608	SPB-608			BP-608			
KAP-TCEP	1,2,3-tris (cyanoethoxy)propane		TCEP	Rt-TCEP	CP-TCEP				

KONIK PHASE RECOMMENDATIONSCHART			
KONIK Phase	**Application**	**Composition**	**Polarity**
KAP-1, KAP-1ht, KAP-1MS	Amines, hydrocarbons, pesticides, PCBs, phenols, sulfur compounds, flavors and fragrances	100% Dimethylpolysiloxane	Non-polar
KAP-5, KAP-5ht, KAP-5MS	Semivolatiles, alkaloids,drugs, FAMEs, halogenated compounds, pesticides, herbicides	5% Phenyl 95% dimethylpolysiloxane	Non-polar
KAP-1701	Pesticides, herbicides, derived sugars, solvent drugs, aromatic hydrocarbons	86% dimethylpolysiloxane 7%phenyl, 7% cyanopropyl	Mid-polar
KAP-WAX, KAP-WAX.DB, KAP-META.WAX	FAMEs, aromas, solvents, BTEX, alcohols, xilene isomers, alcoholic drinks, aromatics, glycols	100% Polyethylene glycol	Polar
KAP-FFAP	FAMEs, free acids, phenols, fragrances, acrilates, glycols	Polyethyleneglycol esterified with nitroterephthalic acid	Polar
KAP-20	Organic volatile compounds, alcoholic drinks, aromatic products	80% dimethylpolysiloxane 20% diphenyl	Mid-polar
KAP-5AMINE	Specially column for the analysis of amines	95% dimethylpolysiloxane 5% diphenyl	Non-polar
KAP-225	FAMEs, alditol acetates, neutral sterols	50% dimethylpolysiloxane 25% phenyl, 25% cyanopropyl	High-Mid Polar
KAP-5.625	EPA methods to the analysis of semi volatile compounds	95% dimethylpolysiloxane 5% diphenyl	Non-polar
KAP-35	CLP-pesticides, aroclors, pharmaceuticals, drugs of abuse, amines	65% dimethylpolysiloxane 35% diphenyl	Low-Mid-polar
KAP-608	Specifically designed for analysing chlorinated pesticides and PCBs. Designed for the EPA 508, 608 and 8080 methods	Propietary bonded and crosslinked phase	Non-polar
KAP-50, KAP-50ht	Drugs, glycols, pesticides, steroids, waxes, triglicerydes	50% diphenyl-50% dimethylpolysiloxane	Mid-polar
KAP-PAG	FAMEs, solvents, aromas	50% Polyethylene, 50% Polyepropylenglycol	Polar
KAP-F50	Residual solvents, pesticides, herbicides	35% Trifluoropropyl- 65% dimethyl polysiloxane	Polar
KAP-1301	Pesticides, arochlors, organic volatiles	94% dimethylpolysiloxane 6% cyanopropylphenyl	Mid-polar
KAP-624	Volatile priority pollutants, EPA Method 502.2	6% Cyanopropyl-phenyl, 94% dimethylpolysiloxane	Polar
KAP-14	Pesticides, phenols, halogenated compounds	86% dimethylpolysiloxane 14% diphenyl	Low-Mid-polar
KAP-META.X5	Semi volatile compounds analysis	Silarylene	Non-polar
KAP-CN100	FAMEs (cis trans isomers), derived sugars, PCB's, dioxins	100% Cyanopropyl Polysiloxane	Polar
KAP-PETROL	Analysis of complex mixtures of hydrocarbons according to the ASTM Standards	100% dimethylpolysiloxane	Non-polar
KAP-50.2PONA	Analysis of hydrocarbons (Paraphine, Olephine, Naftens and Aromatics)	100% dimethylpolysiloxane	Non-polar
KAP-SULFUR	Analysis of sulphurous compounds (natural gas, petrol, wines, beers…)	100% dimethylpolysiloxane	Non-polar
KAP-G43	Made to fulfil the specifications of the American Pharmacopea (USP) for the analysis of residual solvents	94% dimethylpolysiloxane, 6% cyanopropylphenyl	Mid-polar
KAP-G27	Produced to fulfil the American Pharmacopea's (USP) specifications, for the organic volatiles impurities' test in pharmacs	95% dimethylpolysiloxane 5% diphenyl	Non-polar
KAP-STEROL	Complex mixtures analysis of sterols, from animal or vegetal origin	95% dimethylpolysiloxane 5% diphenyl	Non-polar
KAP-2887	Suitable column for SIMDIS evaluation based on ASTM Test Method D2887	100% dimethylpolysiloxane	Non-polar
KAP-META.WAX400	Analysis of volatiles in alcoholic beverages and solvents. Maximum resolution of amylic alcohols.	100% Polyethylene glycol	Polar
KAP-17	Drugs, glycols, pesticides, steroids	50% diphenyl-50% dimethylpolysiloxane	Low-Mid-polar
KAP-CRESOL	For the analysis of phenol compounds (phenols, cresilic acids)	Stationary Phase non bonded	Polar
KAP-WAXOMEGA	FAMEs, Waxes	100% Polyethylene glycol	Polar
KAP-TCEP	Analysis of alcohols in gasoline	Phase1, 2, 3-tris (2-cyanoethoxy) propane	Polar

KONIK CAPILLARY COLUMNS BY INDUSTRY			
Industry	**Application**	**Item nº**	**KONIK Phase**
Oil Producers	Fatty Acids (Cis-Trans)	KAP-882162	Capillary Column KAP-CN100 60 m x 0.25 mm x 0.20 um
	Sterols	KAP-182238	Capillary Column KAP-STEROL 30 m x 0.22 mm x 0.22 um
	Waxes	KAP-120113	Capillary Column KAP-5 15 m x 0.32 mm x 0.10 um
	Fatty Alcohols & Stigmastadiene	KAP-120232	Capillary Column KAP-5 30 m x 0.25 mm x 0.25 um
	Volatiles	KAP-140262	Capillary Column KAP-WAX 60 m x 0.25 mm x 0.25 um
	Halogenated Solvents	KAP-121033	Capillary Column KAP-5 30 m x 0.32 mm x 1.00 um
Wine and Distillates Producers	Methanol and "superiors" alcohols	KAP-601833	Capillary Column KAP-624 30 m x 0.32 mm x 1.80 um
		KAP-601462	Capillary Column KAP-624 60 m x 0.25 mm x 1.40 um
		KAP-601432	Capillary Column KAP-624 30 m x 0.25 mm x 1.40 um
	Volatiles in Alcoholic beverages	KAP-810532	Capillary Column KAP-WAX 30 m x 0.25 mm x 0.50 um
		KAP-816463	Capillary Column KAP-WAX 60 m x 0.32 mm x 0.64 um
		KAP-141035	Capillary Column KAP-WAX 30 m x 0.53 mm x 1.00 um
	Wine Flavours	KAP-142168	Capillary Column SupraWAX-280 60 m x 0.25 mm x 0.25 um
	Wine Pesticides	KAP-820232	Capillary Column KAP-Meta .X5 30 m x 0.25 mm x 0.25 um
		KAP-120232	Capillary Column KAP-5 30 m x 0.25 mm x 0.25 um
	Phenols and Anisol in bottle caps	KAP-520232	Capillary Column KAP-5MS 30 m x 0.25 mm x 0.25 um
		KAP-910232	Capillary Column MTI-5 30 m x 0.25 mm x 0.25 um
	Wine Glycols	KAP-151035	Capillary Column KAP-FFAP 30 m x 0.53 mm x 1.00 um
Flavours and Fragances		KAP-110232	Capillary Column KAPB-1 30 m x 0.25 mm x 0.25 um
		KAP-830232	Capillary Column SupraWAX-280 30 m x 0.25 mm x 0.25 um
		KAP-110262	Capillary Column KAP-1 60 m x 0.25 mm x 0.25 um
		KAP-830262	Capillary Column SupraWAX-280 60 m x 0.25 mm x 0.25 um
Volatiles in water and soils		KAP-603035	Capillary Column KAP-624 30 m x 0.53 mm x 3.00 um
		KAP-603075	Capillary Column KAP-624 75 m x 0.53 mm x 3.00 um
		KAP-6030K5	Capillary Column KAP-624 105 m x 0.53 mm x 3.00 um
		KAP-943035	Capillary Column KAP-Meta.VOC 30 m x 0.53 mm x 3.00 um
		KAP-943065	Capillary Column KAP-Meta.VOC 60 m x 0.53 mm x 3.00 um
		KAP-9430K5	Capillary Column KAP-Meta.VOC 105 m x 0.53 mm x 3.00 um
		KAP-115063	Capillary Column KAP-1 60 m x 0.32 mm x 5.00 um
		KAP-115065	Capillary Column KAP-1 60 m x 0.53 mm x 5.00 um
Analysis of Industrial Solvents		KAP-141253	Capillary Column KAP-WAX 50 m x 0.32 mm x 1.20 um
		KAP-142065	Capillary Column KAP-WAX 60 m x 0.53 mm x 2.00 um
Pharmacy Industry	Residual Solvents in Pharmaceutical	KAP-163035	Capillary Column KAP-G43 30 m x 0.53 mm x 3.00 um
	Products	KAP-175035	Capillary Column KAP-G27 30 m x 0.53 mm x 5.0 um
		KAP-830233	Capillary Column SupraWAX-280 30 m x 0.32 mm x 0.25 um
	Alcohol 96 Impurities	KAP-601833	Capillary Column KAP-624 30 m x 0.32 mm x 1.80 um
	Sacarine Impurities	KAP-502045	Capillary Column KAP-17 10 m x 0.53 mm x 2.00 um
Chlorinated and ☒		KAP-360232	Capillary Column KAP-608 30 m x 0.25 mm x 0.25 um
Phosphorous Pesticides		KAP-820232	Capillary Column KAP-Meta .X5 30 m x 0.25 mm x 0.25 um
		KAP-350232	Capillary Column KAP-35 30 m x 0.25 mm x 0.25 um
		KAP-520232	Capillary Column KAP-5MS 30 m x 0.25 mm x 0.25 um
		KAP-130232	Capillary Column KAP-1701 30 m x 0.25 mm x 0.25 um
PCB Analysis		KAP-520262	Capillary Column KAP-5MS 60 m x 0.25 mm x 0.25 um
PAH Analysis		KAP-820532	Capillary Column KAP-Meta .X5 30 m x 0.25 mm x 0.50 um
Dioxines and Furans		KAP-520262	Capillary Column KAP-5MS 60 m x 0.25 mm x 0.25 um
Petrochemical Applications	Heavies	KAP-610113	Capillary Column KAP-1ht 15 m x 0.32 mm x 0.10 um
	PONA, PNA, PIANO	KAP-110592	Capillary Column KAP-PETROL 100 m x 0.25 mm x 0.50 um
	PONA as ASTM D5134	KAP-110559	Capillary Column KAP-50,2 PONA 50 m x 0.20 mm x 0.50 um
	Fuel Detailed Analysis	KAP-1110G2	Capillary Column KAP-PETRO.150 150 m x 0.25 mm x 1.00 um
	ASTM D2887	KAP-192645	Capillary Column KAP-2887 10 m x 0,53 mm x 2,65 um
	Separtion of alifatics, aromatics and alcohols in fuel	KAP-960462	Capillary Column KAP-TCEP 60 m x 0.25 mm x 0.40 um
Alcohol in blood		KAP-851833	Capillary Column MetaBLOOD1 30 m x 0.32 mm x 1.80 um

KONIK STANDARD PHASE COLUMNS

0.10 mm ID Columns - Polyimide coated

Phase code	Film Thickness (microns)	Length (m) 10	15	20	40
KAP-1	0,1	KAP-110141		KAP-110181	
	0,2				KAP-1121C1
	0,4	KAP-110441		KAP-110481	KAP-1104C1
KAP-5	0,1	KAP-120141		KAP-120181	
	0,17	KAP-121941			
	0,33	KAP-123341			
	0,4	KAP-120441		KAP-120481	
KAP-1701	0,1			KAP-130181	
	0,4			KAP-130481	
KAP-WAX	0,1	KAP-140141		KAP-140181	
	0,2	KAP-142141		KAP-142181	
KAP-FFAP	0,1			KAP-150181	
KAP-225	0,1			KAP-250181	
KAP-50	0,1	KAP-500141		KAP-500181	
	0,2	KAP-502141			
KAP-1MS	0,1	KAP-510141		KAP-510181	
KAP-5MS	0,1	KAP-520141		KAP-520181	
	0,4	KAP-520441		KAP-520481	
KAP-META.WAX	0,1	KAP-520141		KAP-520181	
	0,2	KAP-810141		KAP-810181	
KAP - META.X5	0,4	KAP-812141		KAP-812181	
KAP-SUPRAWAX-280	0,1	KAP-830141	KAP-830111	KAP-830181	
	0,2		KAP-832111	KAP-832181	

0.20 mm ID Columns - Polyimide coated

Phase code	Film Thickness (microns)	Length (m) 12	15	25	30	50	60
KAP-1	0,15		KAP-111319	KAP-111329	KAP-111339	KAP-111359	KAP-111369
	0,33	KAP-1133B9		KAP-113329		KAP-113359	
	0,35		KAP-110319	KAP-110329	KAP-110339	KAP-110359	KAP-110369
	0,5		KAP-110519	KAP-110529	KAP-110539		KAP-110569
KAP-5	0,15		KAP-121319	KAP-121329	KAP-121339	KAP-121359	KAP-121369
	0,33	KAP-1233B9		KAP-123329		KAP-123359	
	0,35		KAP-120319	KAP-120329	KAP-120339	KAP-120359	KAP-120369
	0,4						KAP-120469
	0,5		KAP-120519	KAP-120529	KAP-120539	KAP-120559	KAP-120569
KAP-1701	0,2		KAP-132119		KAP-132139		KAP-132169
KAP-WAX	0,2		KAP-142119		KAP-142139		KAP-142169
	0,4		KAP-140419		KAP-140439		KAP-140469
	0,5		KAP-140512				
KAP-FFAP	0,3		KAP-152119		KAP-152139		KAP-152169
KAP-225	0,2		KAP-252119	KAP-252129	KAP-252139		
KAP-5.625	0,33	KAP-2633B9		KAP-263329		KAP-263359	
KAP-1MS	0,33	KAP-5133B9	KAP-513319	KAP-513329	KAP-513339	KAP-513359	KAP-513369
KAP-5MS	0,11			KAP-520129			
	0,33	KAP-5233B9	KAP-523319	KAP-523329	KAP-523339	KAP-523359	KAP-523369
KAP-624	1,12			KAP-601129			
KAP-META.WAX	1,4				KAP-811439		
KAP-META.X5	0,33	KAP-8233B9		KAP-823329		KAP-823359	
KAP-SUPRAWAX-280	0,2		KAP-832119		KAP-832139		KAP-832169
	0,4						KAP-830469

0.25 mm ID Columns - Polyimide coated

Phase code	Film Thickness (microns)	length (m) 15	25	30	50	60	100	105
KAP-1	0,1	KAP-110112	KAP-110122	KAP-110132	KAP-110152	KAP-110162		
	0,25	KAP-110212	KAP-110222	KAP-110232	KAP-110252	KAP-110262		
	0,33				KAP-110352			
	0,5	KAP-110512	KAP-110522	KAP-110532	KAP-110552	KAP-110562		
	1	KAP-111012	KAP-111022	KAP-111032	KAP-111052	KAP-111062	KAP-111092	KAP-1110K2
KAP-5	0,1	KAP-120112	KAP-120122	KAP-120132	KAP-120152	KAP-120162		
	0,25	KAP-120212	KAP-120222	KAP-120232	KAP-120252	KAP-120262		
	0,5	KAP-120512	KAP-120522	KAP-120532	KAP-120552	KAP-120562		
	1	KAP-121012	KAP-121022	KAP-121032	KAP-121052	KAP-121062		
KAP-1701	0,1	KAP-130112		KAP-130132		KAP-130162		
	0,25	KAP-130212		KAP-130232		KAP-130262		
	0,5	KAP-130512		KAP-130532		KAP-130562		
	1	KAP-131012		KAP-131032		KAP-131062		
KAP-WAX	0,1	KAP-140112		KAP-140132		KAP-140162		
	0,25	KAP-140212		KAP-140232		KAP-140262		
	0,5			KAP-140532		KAP-140562		
	1			KAP-141032				
KAP-FFAP	0,25	KAP-150212		KAP-150232		KAP-150262		
KAP-20	0,25	KAP-200212		KAP-200232		KAP-200262		
	1	KAP-201012		KAP-201032		KAP-201062		
KAP-5AMINE	0,5	KAP-210512		KAP-210532		KAP-210562		
	1	KAP-211012		KAP-211032		KAP-211062		
KAP-225	0,15	KAP-251312		KAP-251332				
	0,25	KAP-250212		KAP-250232				
KAP-5.625	0,1	KAP-260112		KAP-260132		KAP-260162		
	0,25	KAP-260212		KAP-260232		KAP-260262		
	0,5	KAP-260512		KAP-260532				
	1	KAP-261012		KAP-261032				
KAP-35	0,15	KAP-351312		KAP-351332		KAP-351362		
	0,25	KAP-350212		KAP-350232		KAP-350262		
KAP-608	0,25			KAP-360232				
KAP-50	0,15	KAP-501312		KAP-501332		KAP-501362		
	0,25	KAP-500212		KAP-500232		KAP-500262		
	0,5	KAP-500512		KAP-500532		KAP-500562		
KAP-1MS	0,25	KAP-510212		KAP-510232		KAP-510262		
	1	KAP-511012		KAP-511032		KAP-511062		
KAP-5MS	0,1	KAP-520112		KAP-520132		KAP-520162		
	0,25	KAP-520212		KAP-520232		KAP-520262		
	0,5			KAP-520532				
	1	KAP-521012		KAP-521032		KAP-521062		
KAP-50ht	0,1	KAP-530112		KAP-530132				
	0,15	KAP-531312		KAP-531332				
KAP-PAG	0,25	KAP-550212		KAP-550232		KAP-550262		
KAP-F50	0,15	KAP-571312		KAP-571332				
	0,25	KAP-570212		KAP-570232				

Phase code	Film Thickness (microns)	length (m) 15	25	30	50	60	100	105
	0,5	KAP-570512		KAP-570532				
KAP-1301	0,25	KAP-640212		KAP-640232		KAP-640262		
	1	KAP-641012		KAP-641032		KAP-641062		
KAP-624	1,4			KAP-601432		KAP-601462		
KAP-1ht	0,1	KAP-610112		KAP-610132				
KAP-5ht	0,1	KAP-620112		KAP-620132				
KAP-14	0,2	KAP-802112		KAP-802132		KAP-802162		
	0,4	KAP-800412		KAP-800432		KAP-800462		
	1,2	KAP-801212		KAP-801232		KAP-801262		
KAP-META.WAX	0,1	KAP-810112		KAP-810132				
	0,2		KAP-812122			KAP-812162		
	0,25	KAP-810212		KAP-810232		KAP-810262		
	0,5	KAP-810512		KAP-810532				
KAP-META.X5	0,1	KAP-820112		KAP-820132		KAP-820162		
	0,25	KAP-820212		KAP-820232		KAP-820262		
	0,5	KAP-820512		KAP-820532				
	1	KAP-821012		KAP-821032				
KAP-SUPRAWAX-280	0,25	KAP-830212		KAP-830232		KAP-830262		
	0,5	KAP-830512		KAP-830532		KAP-830562		
KAP-CN100	0,2	KAP-882112		KAP-882132	KAP-882152	KAP-882162	KAP-882192	
KAP-WAX.DB	0,2	KAP-932112		KAP-932132		KAP-932162		
	0,25	KAP-930212		KAP-930232				
	0,5			KAP-930532				

0.32 mm ID Columns - Polyimide coated

Phase code	Film Thickness (microns)	length (m) 15	25	30	50	60	100
KAP-1	0,1	KAP-110113	KAP-110123	KAP-110133	KAP-110153	KAP-110163	
	0,25	KAP-110213	KAP-110223	KAP-110233	KAP-110253	KAP-110263	
	0,5	KAP-110513	KAP-110523	KAP-110533	KAP-110553	KAP-110563	
	1	KAP-111013	KAP-111023	KAP-111033	KAP-111053	KAP-111063	
	1,5		KAP-111533				
	3	KAP-113013	KAP-113023	KAP-113033	KAP-113053	KAP-113063	
	5				KAP-115063		
KAP-5	0,1	KAP-120113	KAP-120123	KAP-120133	KAP-120153	KAP-120163	
	0,25	KAP-120213	KAP-120223	KAP-120233	KAP-120253	KAP-120263	
	0,5	KAP-120513	KAP-120523	KAP-120533	KAP-120553	KAP-120563	
	1	KAP-121013	KAP-121023	KAP-121033	KAP-121053	KAP-121063	
	3	KAP-123013	KAP-123023	KAP-123033	KAP-123053	KAP-123063	
KAP-1701	0,1	KAP-130113		KAP-130133		KAP-130163	
	0,25	KAP-130213		KAP-130233		KAP-130263	
	0,5	KAP-130513		KAP-130533		KAP-130563	
	1	KAP-131013		KAP-131033		KAP-131063	
KAP-WAX	0,1	KAP-140113		KAP-140133		KAP-140163	
	0,12		KAP-141233				
	0,25	KAP-140213		KAP-140233		KAP-140263	
	0,5	KAP-140513		KAP-140533		KAP-140563	
	1					KAP-141063	KAP-141093
	1,2		KAP-141223		KAP-141253	KAP-141263	
KAP-FFAP	0,25	KAP-150213		KAP-150233		KAP-150263	
	0,5	KAP-150513		KAP-150533		KAP-150563	
KAP-20	0,25	KAP-200213		KAP-200233		KAP-200263	
	1	KAP-201013		KAP-201033		KAP-201063	
KAP-5AMINE	0,5	KAP-210513		KAP-210533		KAP-210563	
	1	KAP-211013		KAP-211033		KAP-211063	
	1,5	KAP-211513		KAP-211533		KAP-211563	
KAP-225	0,15	KAP-251313		KAP-251333			
	0,25	KAP-250213		KAP-250233			
KAP-5.625	0,1	KAP-260113		KAP-260133		KAP-260163	
	0,25	KAP-260213		KAP-260233			
	0,5	KAP-260513		KAP-260533			
	1	KAP-261013		KAP-261033			
KAP-35	0,15	KAP-351313		KAP-351333		KAP-351363	
	0,25	KAP-350213		KAP-350233		KAP-350263	
	0,5	KAP-350513		KAP-350533		KAP-350563	
KAP-50	0,15	KAP-501313		KAP-501333		KAP-501363	
	0,25	KAP-500213		KAP-500233		KAP-500263	
	0,5	KAP-500513		KAP-500533		KAP-500563	
KAP-1MS	0,25	KAP-510213		KAP-510233		KAP-510263	
	0,5	KAP-510513		KAP-510533		KAP-510563	
	1	KAP-511013		KAP-511033		KAP-511063	

Phase code	Film Thickness (microns)	length (m) 15	25	30	50	60	100
KAP-5MS	0,1	KAP-520113		KAP-520133		KAP-520163	
	0,25	KAP-520213		KAP-520233		KAP-520263	
	0,5	KAP-520513		KAP-520533		KAP-520563	
	1	KAP-521013		KAP-521033		KAP-521063	
	1,4			KAP-521435			
KAP-PAG	0,25	KAP-550213		KAP-550233		KAP-550263	
KAP-F50	0,15	KAP-571313		KAP-571333			
	0,25	KAP-570213		KAP-570233			
	0,5	KAP-570513		KAP-570533			
KAP-1301	0,25	KAP-640213		KAP-640233		KAP-640263	
	1	KAP-641013		KAP-641033		KAP-641063	
KAP-624	1,8			KAP-601833		KAP-601863	
KAP-1ht	0,1	KAP-610113		KAP-610133			
KAP-5ht	0,1	KAP-620113		KAP-620133			
KAP-14	0,2	KAP-802113		KAP-802133		KAP-802163	
	0,4	KAP-800413		KAP-800433		KAP-800463	
	1,2	KAP-801213		KAP-801233		KAP-801263	
KAP-META.WAX	0,25	KAP-810213		KAP-410233		KAP-810263	
	0,5	KAP-810513		KAP-810533		KAP-810563	
	0,64					KAP-816463	
	1	KAP-811013		KAP-811033		KAP-811063	
KAP-META.X5	0,1	KAP-820113		KAP-820133		KAP-820163	
	0,25	KAP-820213		KAP-820233		KAP-820263	
	0,5	KAP-820513		KAP-820533			
	1	KAP-821013		KAP-821033			
KAP-SUPRAWAX-280	0,25	KAP-830213		KAP-830233		KAP-830263	
	0,5	KAP-830513		KAP-830533		KAP-830563	
	1			KAP-831033		KAP-831063	
KAP-CN100	0,2	KAP-882113		KAP-882133		KAP-882163	
KAP-WAX.DB	0,25	KAP-930213		KAP-930233			
	0,5			KAP-930533			
	1			KAP-931033		KAP-931063	

0.53 mm ID Columns - Polyimide coated

Phase code	Film Thickness (microns)	length 10	15	25	30	50	60	75	100	105
KAP-1	0,1		KAP-110115	KAP-110125	KAP-110135	KAP-110155	KAP-110165			
	0,5		KAP-110515	KAP-110525	KAP-110535	KAP-110555	KAP-110565			
	0,88	KAP-110845			KAP-110835					
	1,5		KAP-111515	KAP-111525	KAP-111535	KAP-111555	KAP-111565			
	2,65	KAP-112645			KAP-112635					
	3	KAP-113045	KAP-113015	KAP-113025	KAP-113035	KAP-113055	KAP-113065		KAP-113095	KAP-1130K5
	5	KAP-115045	KAP-115015	KAP-115025	KAP-115035	KAP-115055	KAP-115065			
	7		KAP-117015		KAP-117035		KAP-117065			
KAP-5	0,1		KAP-120115	KAP-120125	KAP-120135	KAP-120155	KAP-120165			
	0,5		KAP-120515	KAP-120525	KAP-120535	KAP-120555	KAP-120565			
	0,88				KAP-120835					
	1			KAP-121025		KAP-121055				
	1,5		KAP-121515	KAP-121525	KAP-121535	KAP-121555	KAP-121565			
	2,65	KAP-122645			KAP-122635					
	3		KAP-123015	KAP-123025	KAP-123035	KAP-123055	KAP-123065			
	5		KAP-125015	KAP-125025	KAP-125035	KAP-125055	KAP-0125065			
KAP-1701	0,1		KAP-130115		KAP-130135		KAP-130165			
	0,5		KAP-130515		KAP-130535		KAP-130565			
	1		KAP-131015		KAP-131035		KAP-131065			
	1,5		KAP-131515		KAP-131535		KAP-131565			
	2				KAP-132035					
KAP-WAX	0,5				KAP-140535	KAP-140555				
	1	KAP-141045	KAP-141015		KAP-141035		KAP-141065			
	1,33				KAP-141735					
	2		KAP-142015		KAP-142035		KAP-142065			
KAP-FFAP	0,5		KAP-150515		KAP-150535		KAP-150565			
	1		KAP-151015	KAP-151025	KAP-151035		KAP-151065			
KAP-20	0,5		KAP-200515		KAP-200535		KAP-200565			
	1		KAP-201015		KAP-201035		KAP-201065			
KAP-5AMINE	1		KAP-211015		KAP-211035		KAP-211065			
	3		KAP-213015		KAP-213035		KAP-213065			
KAP-225	1		KAP-251015		KAP-251035					
KAP-5.625	0,25						KAP-260265			
	0,5				KAP-260535					
	1				KAP-261035					
	1,5		KAP-261515							
KAP-35	0,5		KAP-350515		KAP-350535		KAP-350565			
	1		KAP-351015		KAP-351035		KAP-351065			
	3				KAP-353035					
KAP-608	0,5		KAP-360515		KAP-360535					
	0,83		KAP-368315		KAP-368335					
KAP-50	0,5		KAP-500515		KAP-500535		KAP-500565			
	1		KAP-501015		KAP-501035		KAP-501065			
KAP-1MS	0,5		KAP-510515		KAP-510535					
	1		KAP-511015		KAP-511035					
	1,5		KAP-511515		KAP-511535					
KAP-5MS	0,5		KAP-520515		KAP-520535					
	1		KAP-521015		KAP-521035					
	1,5		KAP-521515		KAP-521535					
KAP-PAG	0,5		KAP-550515		KAP-550535		KAP-550565			
KAP-F50	1		KAP-571015		KAP-571035					
KAP-1301	1		KAP-641015		KAP-641035		KAP-641065			
KAP-624	3			KAP-603025	KAP-603035		KAP-603065	KAP-603075		KAP-6030K5
KAP-14	1		KAP-801015		KAP-801035		KAP-801065			
	2		KAP-802015		KAP-802035		KAP-802065			

Phase code	Film Thickness (microns)	length 10	15	25	30	50	60	75	100	105
KAP-META WAX	0,5				KAP-810535					
	1,2		KAP-811215		KAP-811235					
KAP-META.X5	0,5		KAP-820515		KAP-820535					
	1		KAP-821015		KAP-821035					
	1,5		KAP-821515		KAP-821535					
KAP-SUPRAWAX-280	0,5		KAP-830515		KAP-830535					
	1		KAP-831015		KAP-831035		KAP-831065			
	2				KAP-832035		KAP-832065			
KAP-CN100	0,2		KAP-882115		KAP-882135		KAP-882165			
KAP-WAX.DB	0,5				KAP-930535					
	1		KAP-931015		KAP-931035		KAP-931065			
	1,5				KAP-931535					

Konik Kap Special Phase Column

Konik offers a special column for environment, petrochemical, high temperature and triglycerides analysis and columns for high speed analyses

Phase code	Item No.	Film Thickness (microns)	diameter (mm)	length (m)
KAP-50,2 PONA	KAP-110559	0,5	0,2	50
KAP-PETRO	KAP-110592	0,5	0,25	100
	KAP-1110G2	1,0	0,25	150
KAP-SULFUR	KAP-114033	4,0	0,32	30
KAP-G43	KAP-163035	3,0	0,53	30
KAP-G27	KAP-175035	5,0	0,53	30
KAP-STEROL	KAP-182238	0,22	0,22	30
KAP-2887	KAP-192645	2,65	0,53	10
KAP-META.WAX400	KAP-402153	0,2	0,32	50
KAP-17	KAP-502045	2,0	0,53	10
KAP-CRESOL	KAP-712132	0,2	0,25	30
	KAP-712162	0,2	0,25	60
KAP-WAX.OMEGA	KAP-840232	0,25	0,25	30
	KAP-840233	0,25	0,32	30
	KAP-840535	0,50	0,53	30
KAP-META.BLOOD1	KAP-851833	1,8	0,32	30
	KAP-853035	3	0,53	30
KAP-META.BLOOD2	KAP-861233	1,2	0,32	30
	KAP-862035	2	0,53	30
KAP-MTI-5	KAP-910232	0,25	0,25	30
	KAP-810233	0,25	0,32	30
	KAP-910515	0,5	0,53	15
KAP-TCEP	KAP-960432	0,4	0,25	30
	KAP-960452	0,4	0,25	50
	KAP-960462	0,4	0,25	60
KAP-META.VOC	KAP-941249	1,2	0,2	10
	KAP-941532	1,5	0,25	30
	KAP-941562	1,5	0,25	60
	KAP-941863	1,8	0,32	60
	KAP-943035	3	0,53	30
	KAP-943063	3	0,32	60
	KAP-943065	3	0,53	60
	KAP-9430K5	3	0,53	105
KAP-META.AMINE	KAP-635013	5	0,32	15
	KAP-635033	5	0,32	30
	KAP-635063	5	0,32	60

CAPILLARY COLUMN ACCESSORIES

Capillary Survival Kit™

AUC205625

Our Capillary Survival Kit was designed with the practicing chromatographer in mind. Each kit includes:

- Magnifier with built in light
- Slide-Lok tweezers for holding small items; "spacing" the column proper distances into the injection port, etc.
- 15 cm steel ruler
- 3 column scribes, for cleanly-cut columns
- 2 universal unions for joining broken capillary columns or connecting guard columns
- Single-ended pinvise holds drill bits
- 3 drill bits, 0.4 mm, 0.5 mm and 0.8 mm
- Multipurpose septum pick
- Nylon brushes, 1/8", 3/16", and 1/4"
- Pipecleaners 5 each,1/8" OD and 1/4" OD
- Open-end wrench, 1/4" + 5/16"
- High temperature string (>400^{O}C) 25 ft.
- Ferrule remover - 2

Description	Item No.
Capillary Survival Kit	AUC205625

Universal Fused Silica Connectors

Universal Connector;
Universal Y-Splitter

These quartz connectors will join columns from 0.25 mm to 0.53 mm id. Procedure: cut the capillary column with a ceramic column scribe; be sure the end is cut squarely. Insert the column into the appropriate leg of the connector to make a snug fit. Heat in the GC oven under carrier gas flow for one hour at 250°C, to fuse the column's polyimide coating to the wall of the union. For a stronger physical attachment we recommend using polyimide sealing resin.

Description	Item No.
Universal Connector, 5/pk	AUC207950
Universal Y-Splitter, each	AUC207960

Fused Silica Guard Column Kits

Fused Silica Guard Column Kit

Kits include one 5 meter length of deactivated fused silica tubing and 5 universal glass unions. Connect a length of tubing from 1/2 to 5 meters to your column, by inserting one end of each into a universal union snugly. Fuse at 125°C under carrier gas flow in the GC oven for one hour. When the guard column becomes contaminated break off a 1/2 meter length.

Description	Item No.
0.25 mm id Guard Column Kit	AUC207625
0.32 mm id Guard Column Kit	AUC207632
0.53 mm id Guard Column Kit	AUC207653

Fused Silica Guard Columns

Description	dimension	diameter		
		0,25mm	0,32mm	0,53mm
Non-Polar	3x1 m	KAP-100012	KAP-100013	KAP-100015
	1x5 m	KAP-100052	KAP-100053	KAP-100055
	1x10 m	KAP-100042	KAP-100043	KAP-100045
	1 x 20 m	KAP-100082	KAP-100083	KAP-100085
Medium Polarity	3x1 m	KAP-200012	KAP-200013	KAP-200015
	1x5 m	KAP-200052	KAP-200053	KAP-200055
	1x10 m	KAP-200042	KAP-200043	KAP-200045
	1 x 20 m	KAP-200082	KAP-200083	KAP-200085
Polar	3x1 m	KAP-300012	KAP-300013	KAP-300015
	1x5 m	KAP-300052	KAP-300053	KAP-300055
	1x10 m	KAP-300042	KAP-300043	KAP-300045
	1 x 20 m	KAP-300082	KAP-300083	KAP-300085
Aquasafe	3x1 m	KAP-310012	KAP-310013	KAP-310015
	1x5 m	KAP-310052	KAP-310053	KAP-310055
	1x10 m	KAP-310042	KAP-310043	KAP-310045
	1 x 20 m	KAP-310082	KAP-310083	KAP-310085
Base-Deactivated	3x1 m	KAP-320012	KAP-320013	KAP-320015
	1x5 m	KAP-320052	KAP-320053	KAP-320055
	1x10 m	KAP-320042	KAP-320043	KAP-320045
	1 x 20 m	KAP-320082	KAP-320083	KAP-320085

Column Scribe

Used to cut capillary tubing. Simply pull one smooth edge of the hard ceramic scribe (tilted about 45 degrees) across the column to lightly score the fused silica. Bend the column opposite the score and the column separates cleanly.

Description	Item No.
Column Scribe, 10/pk	AUC205312

AUC205312

Polyimide Sealing Resin

Permanently seal silica columns to capillary column connectors, to eliminate leaks or premature separation of the column. It is also useful as a high temperature glue.
Maximum operating temperature is 300°C. 10 grams.

Description	Item No.
Polyimide Sealing Resin	AUC204002

AUC204002

AUC202346 AUC202348

Split Vent Trap

When using a GC in the split injection mode, up to 99% of the sample is vented to the lab atmosphere. The split vent trap contains 1200 mg of activated charcoal, a highly effective scrubber of organics, in replaceable tubes. Simply attach the split vent trap to the split vent fitting on your GC, and replace the activated charcoal tube periodically. The trap consists of glass adsorbent tubes, nickel plated 1/8" end fittings and a clear plastic sleeve. Each trap is shipped with 3 spare replaceable charcoal tubes (4 total); replacing tubes is quick and easy. We recommend changing replacement tubes every one to two weeks, depending on GC use.

Description	Item No.
Split Vent Trap	AUC202346
Replacement Charcoal Tubes, 3/pk	AUC202348

AUC206211

Injection Port Cleaning Kit

This is designed for cleaning all GC injection ports, including those in Shimadzu instruments. Kit contains three stainless steel brushes, 5 mm for Shimadzu, 1/4" and 3/8", and one scraper for removing septum residue.

Description	Item No.
Injection Port Cleaning Kit	AUC206211

AUC205220

FID Cleaning Kit

Use this kit to clean both the jet tip and collector. It includes three jet reamers, 0.016", 0.019", and 0.024" OD; one mini-drill bit 0.0102" OD; two wire mini-brushes, one brass and one stainless steel; and a dual-ended handle for the reamers and brushes.

Description	Item No.
FID Cleaning Kit	AUC205220

AUC205215

Injection Liner Cleaning Kit

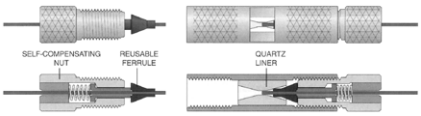
This kit includes four different sizes of nylon brushes to clean most liners, and one foot of pipe cleaner. The 4 mm and 2 mm diameter brushes clean standard liners; the 1 mm and 0.5 mm diameter brushes can reach inside reversible tapered liners.

Description	Item No.
Injection Liner Cleaning Kit	AUC205215

Fused Silica Visi-Union, Quartz Lined

This fitting may be used at temperatures up to 400ºC. It has a quartz liner and self compensating nuts for correct sealing force as temperature varies. Ferrules may be re-used, and must be purchased separately.

Description	Item No.
Fused Silica Union	AWVFSKZU1
Replacement Liner	AWVFSQ1
Replacement Nut	AWVFSZN1



Fused Silica Visi-Union

Ferrules for Fused Silica Visi-Union	
For column ID 0.25 mm, 10/pk	AWVFS1.35-R10
For column ID 0.32 mm, 10/pk	AWVFS1.45-R10
For column ID 0.53 mm, 10/pk	AWVFS1.75-R10

1/32" mm Ultra Low Mass External Unions

For capillary tubing 0.1 mm to 0.32 mm ID. It has very low mass and can be hand-tightened to seal. Use only with 1/32" fused silica adapters; metal ferrules cannot be used.

Description	Tubing OD	Item No.
1/32" Union, Bore 0.25 mm		AWVEU.5
1/32" Union, Bore 0.50 mm		AWVEU.5L
1/32" Union, Bore 1/32" mm		AWVEU.5T
1/32" Fused Silica Tubing Adapter	< 0.25 mm	AWVFS.25-5
1/32" Fused Silica Tubing Adapter	0.25 - 0.4 mm	AWVFS.4-5
1/32" Fused Silica Tubing Adapter	0.5 mm	AWVFS.5-5

AWVEU.5

1/32" Union

Ferrule Remover

Two tools are supplied for capillary ferrules from 0.4 mm to 0.8 mm ID. The tip has a spiral-cut ratchet design that slides into the ferrule easily then grabs on the way out.

Description	Item No.
Ferrule Remover, 2/pk	AUC205315

AUC205315

AUC205305

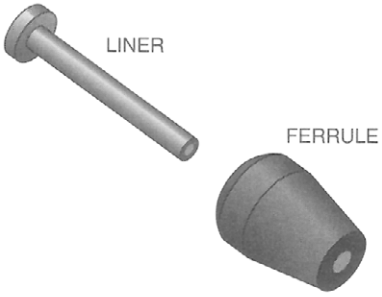
Carbide- or Diamond-Tipped Pencils

Used for cutting fused silica tubing, or special applications. Simple to use; score the tubing with a single scratch, then bend opposite the scratch to separate the tubing.

Description	Item No.
Carbide Tipped Pencil	AUC205305
Diamond Tipped Pencil	AUC205310

AUC205310

Valco Removable Adapters



Valco Removable Adapters

These provide direct connections of fused silica tubing within Valco fittings. The FSR adapter is recommended for use in valves. It consists of two polyimide components: a liner which slides over the fused silica tubing, and a ferrule. The liner and the capillary tubing will be removed from the valve as the nut is unscrewed.

Description	Tubing OD	Item No.
1/32" Adapter with Removable Liner	< 0.25 mm	AWVFSR.25-5
	0.25 - 0.4 mm	AWVFSR.4-5
	< 0.5 mm	AWVFSR.5-5
1/32" Replacement Liner	< 0.25 mm	AWVFSL.25-5
	0.25 - 0.4 mm	AWVFSL.4-5
	< 0.5 mm	AWVFSL.5-5
1/32" Nut		AWVZN.5-10
1/32" Ferrule		AWVZF.5V-5
1/16" Adapter with Removable Liner	< 0.5 mm	AWVFS1R.5-5
	0.6 - 0.8 mm	AWVFS1R.8-5
1/16" Replacement Liner	< 0.5 mm	AWVFS1L.5-5
	0.6 - 0.8 mm	AWVFS1L.8-5
1/16" Nut		AWVZN1-10
1/16" Ferrule		AWVZF1V-5

Valco Fused Silica Adapters

Valco Fused Silica Adapters

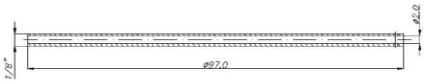
These adapters permit easy use of capillary columns with Valco valves, and provide direct connections of fused silica tubing within Valco fittings. Made from polyimide. The one-piece fused silica adapter is not reusable; for reusable service use the Valco removable adapters.

Description	Tubing OD	Item No.
1/32" Fused Silica Tubing Adapter	< 0.25 mm	AWVFS.25-5
	0.25 - 0.4 mm	AWVFS.4-5
	0.5 mm	AWVFS.5-5
1/32" Nut		AWVZN.5-10
1/32" Ferrule		AWVZF.5V-5
1/16" Fused Silica Tubing Adapter	< 0.4 mm	AWVFS1.4-5
	0.5 mm	AWVFS1.5-5
	0.6 - 0.8 mm	AWVFS1.8-5
1/16" Nut		AWVZN1-10
1/16" Ferrule		AWVZF1V-5

INJECTION PORT LINERS

- Polysiloxane deactivated borosilicate glass (quartz where noted)
- Guaranteed inert for phenols, organic acids and bases

KONIK injection port liners provide a clean nonadsorptive surface for your simple. Regular replacement of liners protects your capillary column from potentially harmful non-volatiles that might otherwise deposit on your column. All liners help protect the vaporized sample from contacting the metal wall of the inlet as sample flows onto the column.
The split-splitless liner is a quartz straight tube, which gives all-around good performance at low cost. It can be use in KONIK capillary or standard injection. Other liners designs are further optimized for specific injection techniques as Solid Phase Micro Extraction with the KONIK Robokrom, Large Volume Injection with the KONIK PTV injection port or the complete range of K2 liners, for the LC-GC coupling technique.



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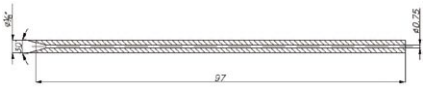

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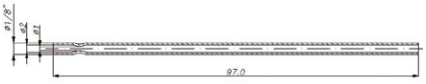


433AINS005/2

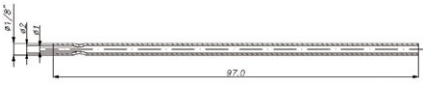
For Konik capillary GC's

Style	lenght x IDmm	Item nº
split/splitless	97 mm x 2.0 mm	433AINS005/0
SPmE liner	97 mm x 0.75 mm	433AINS005/1
PTV liner	97 mm x 2.0 mm	433AINS005/2

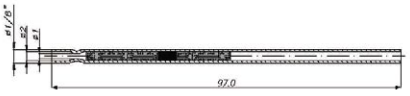
Konik K2 adsorbent traps

KONIK K2 Adsorbent traps for the combined HPLC-HRGC K2 system. Use different type of adsorbent trap for volatile and non-volatile compounds. Alls traps are preconditioning and built under a proprietary technical procedure of KONIK.
All traps are design in quartz or deactivated glass. Regular replacement of the adsorbent trap gives you the maximum performance in your results.

Style	**Item nº**
K2 Empty trap - quartz	KNK-K2-LEMPTQ
K2 Empty trap – glass	KNK-K2-LEMPTG
K2 TENAX trap - quartz	KNK-K2-LTENXQ
K2 TENAX trap – glass	KNK-K2-LTENXG
K2 OV-17 trap - quartz	KNK-K2-LOV17Q
K2 OV-17 trap – glass	KNK-K2-LOV17G
K2 PDMS trap - quartz	KNK-K2-LPDMSQ
K2 PDMS trap – glass	KNK-K2-LPDMSG



Empty Trap



Adsorbent Trap

FERRULES

Capillary Column Ferrules

KONIK provides ferrules for capillary columns made from Graphite, Vespel®, Vespel®/Graphite and PTFE. For more information see chapter 3.
Graphite for high temperature use. This is also the softest ferrule material, so it seals gas tight with finger-tight pressures, without the risk of breaking the column. May be reused several times if not over-tightened. The one-piece design fits standard fittings, and does not need a back ferrule. Upper temperature limit is 450ºC.
Vespel/Graphite Ferrules made from a polyimide/graphite blend are recommended for GC/MS interface applications. Our one-piece design requires no back ferrule, and can be reused if not over-tightened. Upper temperature limit is 400ºC.

Ferrules/ Capillary Columns

- 0.25 mm ID columns use 0.4 mm ID ferrules
- 0.32 mm ID columns use 0.5 mm ID ferrules
- 0.53 mm ID columns use 0.8 mm ID ferrules

Ferrule Sizes

A 1/16" ferrule actually measures 1/8" in diameter, while 1/8" ferrules measure 1/4" in diameter. Ferrule terminology arose because a 1/16" ferrule was normally used with 1/16" OD tubing, and so required a ferrule about twice a width. Capillary chromatographers use the same 1/16" fittings, even though capillary columns are much narrower than 1/16" tubing.

Ferrules - Sold in packages of 10

Size	Graphite	Vespel/Graphite
1/16" mm to 0.3 mm		AUC213103
1/16" mm to 0.4 mm	AUC211104	AUC213104
1/16" mm to 0.5 mm	AUC211105	AUC213105
1/16" mm to 0.8 mm	AUC211108	AUC213108
1/16" mm two-hole 0.4 mm / 0.4 mm		AUC213124
1/16" mm two-hole 0.5 mm / 0.5 mm	AUC211125	AUC213125

CUSTOM PACKED GC COLUMNS

We make custom-packed GC columns using high-quality materials. Any stationary phase can be chosen from our listings on page 27, in combination with nearly all listed supports. The use of other stationary phases are subject to special quotation. Columns are supplied as 6" diameter coils, unless instrument make and model is specified or dimensions are specified.

Stationary Phases

Usually the solid support will be coated with a liquid stationary phase. Exceptions are molecular sieves and porous polymers such as HayeSep® or Porapak®, which are normally used un-coated. For a complete listing of available stationary phases.

Packed GC Column

Solid Supports

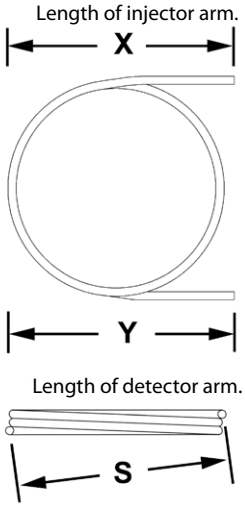
Porous Polymer Supports
- HaySep A, B, C, D, DB, DIP, N, P, Q, R, S, T
- Tenax®
- Porapak N, P, PS, Q, QS, R, S, T

Molecular Sieves
- 4A, 5A, 13X

Custom Column Ordering

To completely specify a custom column, please provide the information requested below.

1. Length - feet or meters
2. Tubing Material - stainless steel or glass
3. Stationary Phase -** see listings page 27. Phases subject to surcharges; see Table 1
A) Stationary Phase 1, plus % loading
B) Stationary Phase 2* (if dual phase), plus % loading
4. Solid Support - specify material and grade (for example, HayeSep® D)
Expensive supports have surcharges; see Table 2
A) Support
B) Mesh Size - specify one 60/80, 80/100 or 100/120
5. Instrument Manufacturer
6. Model Number
7. Fittings - brass or stainless steel*



Span, the distance between arms, tube center to tube center.

Table 1. Stationary Phase Surcharges

Surcharges apply to the following expensive phases:
- EGSS-X
- OV-225
- OV-275
- OV-330
- OV-1701
- Polyphenylether
- Silars
- Dexsils

Table 2. Support Surcharges

- Carbon Molecular Sieves
- HayeSep
- Porapak®
- Tenax®
- Carbopacks

*Surcharge will be added
**Not required with solid adsorbents such as HayeSep, Molecular Sieves, etc.

Glass Column

Glass Columns - Silane Treated

- Custom Packed to your specifications
- Silanized for inertness
- High quality
- Available for most instruments

Column Configuration. The length of the "arms" is indicated by dimensions X and Y. These dimensions along with the span between the arms allows confirmation that the column will fit correctly in your instrument.
Column Installation. All of our glass columns are supplied with nuts and graphite ferrules. We recommend graphite ferrules because they are soft, to seal securely around the column without excessive tightening. They will not stick to the glass, for easy removal. Complete installation instructions are included with each column.

Recommended Accessories:

- **1/4" Graphite ferrules (10/pk) -** Item AUC211400

To Order a Packed Column

Specify the "empty" catalog number with a "P" added to the end, and specify the packing (example: 3% OV-225 on Chromosorb® W-HP, 80/100 mesh). Some expensive packing materials are subject to a surcharge; see the Surcharge Table.

1. Stationary Phase (see listings on page 27)
   Expensive phases have surcharges; see Surcharge Table
   A) Stationary Phase 1
      % Loading
   B) Stationary Phase 2 - Surcharge for dual phase columns
      % Loading

2. Solid Support - Specify material and grade (example: Chromosorb W-AW; HayeSep® D)
   Expensive supports have surcharges; see Surcharge Table
   C) Support
   D) Mesh Size- specify one: 60/80, 80/100, or 100/120

Surcharge Table: Surcharges apply to the following expensive phases:

Stationary Phase Surcharges
- Dexsils
- EGSS-X
- OV-225
- OV-275
- OV-330
- OV-1701
- Polyphenylether
- Silars

Support Surcharges
- Chromosorb T
- Carbon Molecular Sieves
- HayeSep
- Porapak®
- Chromosorb 101 - 109
- Tenax®
- Carbopacks

STATIONARY PHASES

Description	Sugg. Subst.	Sol	McReynold's 1	2	3	4	5	OC Min/Max	ItemNo.	Qty
Apiezon L		C	32	22	15	32	42	20/300	AUC010017	50 g
Bentone 34		T,C						20/200	AUC010030	50 g
Carbowax 1000 (G14)		M	347	607	418	626	589	40/150	AUC010059	50 g
Carbowax 1540		C	371	639	453	666	641	40/200	AUC010063	50 g
Carbowax 4000 (G15)		C	317	545	378	578	521	60/200	AUC010065	50 g
Carbowax 20M (G16)		C	322	536	368	572	510	60/200	AUC010069	50 g
Carbowax 20M Terephthalic acid (TPA)(G25)		C	321	537	367	573	520	60/250	AUC010071	50 g
Dexsil 300 (G33)		T	47	80	103	148	96	20/450	AUC010093	5 g
Dexsil 400		T	59	114	140	187	173	20/450	AUC010094	5 g
Dexsil 410		T	85	165	169	242	180	20/450	AUC010095	5 g
Diethylene glycol adipate (DEGA)		A	378	603	460	665	658	20/190	AUC010103	25 g
Diethylene glycol succinate (DEGS) (G4)		A	496	746	590	837	835	20/200	AUC010105	25 g
Di (2-Ethylhexyl) sebacate (Octoil S) (G12)		A	72	168	108	180	125	-20/125	AUC010109	50 g
Diisodecyl phthalate (DIDP) (G24)		A	84	173	137	218	155	-20/150	AUC010115	50 g
Dinonyl phthalate		A	83	183	147	231	159	20/150	AUC010133	25 g
FFAP	OV-351	C	340	580	397	602	627	50/250	AUC010156	25 g
Glycerol		M						20/100	AUC010161	50 g
Halocarbon Oil 14-25		C						20/150	AUC010163	50 g
Igepal CO-880		C	259	461	311	482	426	100/200	AUC010179	50 g
Kel-F Oil No. 10		A						20/100	AUC010189	50 g
Silicone DC-200, 12,500cstk	OV-101	T	16	57	45	66	43	0/200	AUC001012	50 g
Silicone DC-550 (G28)	OV-101	T	81	124	124	189	145	20/225	AUC001015	50 g
Silicone DC-710	OV-101	A	107	149	153	228	190	20/225	AUC001018	50 g
Silicone DC-QF-1	OV-210	A	144	233	355	463	305	20/250	AUC001021	50 g
Silicone GE-SE-30	OV-1	T	15	53	44	64	41	50/300	AUC001023	50 g
Silicone GE-SE-52	OV-73	T	32	72	65	98	67	50/300	AUC001025	50 g
Silicone GE-SE-54	OV-73	T	33	72	66	99	67	100/300	AUC001026	50 g
Silicone OV-1 (Dimethyl) (G2)		T	16	55	44	65	42	100/350	AUC001041	10 g
Silicone OV-3 (Methyl 10% Phenyl)		A	44	86	81	124	88	20/350	AUC001042	25 g
Silicone OV-7 (80% Methyl 20% Phenyl)		A	69	113	111	171	128	20/350	AUC001043	25 g
Silicone OV-17 (50% Methyl 50% Phenyl)		A	119	158	162	243	202	20/350	AUC001045	25 g
Silicone OV-25 (Phenylmethyldiphenyl) (G17)		A	178	204	208	305	280	20/350	AUC001047	10 g
Silicone OV-61 (Diphenyldimethyl)		A	101	143	142	213	174	20/250	AUC001048	10 g
Silicone OV-73 (Diphenyldimethyl Gum) (G27)		T	40	86	76	114	85	20/350	AUC001049	10 g
Silicone OV-101 (Dimethyl) (G1)		T	17	57	45	67	43	20/350	AUC001050	20 g
Silicone OV-105 (Cyanopropyldimethyl)		A	36	108	93	139	86	20/250	AUC001051	10 g
Silicone OV-202 (Trifluoropropylmethyl) (G6)		T	146	238	358	468	310	0/275	AUC001052	10 g
Silicone OV-210 (Trifluoropropylmethyl)		T	146	238	358	468	310	20/275	AUC001053	25 g
Silicone OV-225 (Cyanopropylmethyl phenyl)		A	228	369	338	493	386	20/250	AUC001054	10 g
Silicone OV-275 (Dicyanoallyl)		A	629	872	763	1106	849	20/275	AUC001055	5 g
Silicone OV-330 (Carbowax-Silicone)		A	222	391	273	417	368	30/250	AUC001056	5 g
Silicone OV-351 (Replaces FFAP)		T	335	552	382	583	540	50/250	AUC001058	10 g
Silicone OV-1701 (Dimethylphenylcyano)		A	67	170	153	228	171	20/325	AUC001059	3 g
Silicone Silar 5CP		T	316	494	637	531		50/275	AUC001083	5 g

McReynold's Code
1 = Benzene
2 = Butanol
3 = 2-Pentanone
4 = Nitropropane
5 = Pyridine

Solvent Code
A = Acetone
T = Toluene
C = Chloroform
M = Methanol

SOLID SUPPORTS AND ADSORBENTS

HayeSep® Porous Polymers

HayeSep D

These polymer supports are suitable for a wide range of separations. HayeSep polymers are direct replacements for the equivalent type of Porapak*; for example HayeSep Q can be directly substituted for methods developed with PoraPak Q. Since there are virtually no chemically active sites in HayeSep polymers, silylation is not required.

HayeSep D - This is a high-purity divinylbenzene polymer with 80% highly-crosslinked DVB. It combines high surface area with a high operating temperature. HayeSep D polymers offer superior separation characteristics for light gases; significant separation abilities include the separation of CO and CO2 from room air at ambient temperatures and the separation of acetylene prior to other C2's. It is highly recommended for the separation of water and hydrogen sulfide. HayeSep D is available in three different porosities with surface areas from 774 to 800 m^2/g. This range is especially useful for certain difficult separations; for example water elutes before ethane with DB, but after ethane with Dip. Relative polarity for other HayeSep polymers is shown below; 1 is least polar and 10 is most polar.

Polymer Materials:
- **ACN -** Acrylonitrile
- **EGDM -** Ethyleneglycoldimethacrylate
- **NVP -** N-Vinyl-2-Pyrollidinone
- **PEI -** Polyethyleneimine
- **VP -** 4-Vinylpyridine
- **DVB -** Divinyl Benzene

Type	Composition	Max. Temp*	Surface Area	Polarity**
A	DVB/EGDM	165°C	526 m2/g	7
B	DVB/PEI	190	608	8
C	DVB/ACN	250	442	6
D	DVB, 80%	290	803	1
DB	DVB, 80%	290	781	1
DIP	DVB, 80%	290	774	1
N	DVB, EGDM	165	405	9
P	DVB, Styrene	250	165	3
Q	DVB, 60%	275	582	2
R	DVB/NVP	250	344	5
S	DVB/VP	250	583	4
T	EGDM	165	250	10

** Oxygen-free carrier gas*
*** 1 = lowest, 10 = highest*

HayeSep Polymers - 75 cc/ bottle

	Mesh Size		
Type	**60/80**	**80/100**	**100/120**
A	AUC483021	AUC483022	AUC483023
B	AUC483024	AUC483025	AUC483026
C	AUC483028	AUC483029	AUC483030
D	AUC483031	AUC483032	AUC483033
DB	AUC483041	AUC483042	AUC483043
DIP	AUC483034	AUC483035	AUC483036
N	AUC483001	AUC483002	AUC483003
P	AUC483004	AUC483005	AUC483006
Q	AUC483014	AUC483015	AUC483016
R	AUC483008	AUC483009	AUC483010
S	AUC483011	AUC483012	AUC483013
T	AUC483018	AUC483019	AUC483020

Molecular Sieve

Molecular sieves are synthetic alumino-silicates of sodium, potassium or calcium, of various pore sizes. The pores are precisely uniform in size. Molecular Sieves are used to separate the fixed gases. CO, CH4, O2 and Ar are easily separated at room temperature. 100 g/ bottle

Molecular Sieve 5A

	Mesh Size			
Support	**40/60**	**60/80**	**80/100**	**100/120**
Molecular Sieve 4A, 100 g	AUC485320	AUC485323	AUC485326	AUC485330
Molecular Sieve 5A, 100 g	AUC485333	AUC485336	AUC485339	AUC485442
Molecular Sieve 13X, 100g		AUC485448	AUC485451	AUC485454

Porapaks®

Porapak column packing materials consist of spherical polymer beads. These packings are chemically and physically stable with consistent particle size, porosity and surface area.

Versatility for Special Applications

Porapak packing is a versatile polymer material available in different chemistries which increase in polarity and vary in retention properties for the efficient analysis of many compounds. These packing materials offer many advantages:

- Polar molecules elute quickly making analysis simple and straight forward
- No liquid phase eliminates stationary phase bleed
- No surface hydroxyl groups eliminates tailing of highly polar molecules or of large sample loads for trace analysis and preparative GC
- Stable baselines at high temperatures

Porapak Q

Porapak Retention Data - minutes*

Compound	P	Q	R	S	N	T
Air	.23	.24	.24	.24	.24	.24
Carbon Dioxide	.36	.65	.60	.66	.90	1.26
Nitric Oxide	.27	.30	.28	.26	.28	.28
Nitrous Oxide	.42	.76	.66	.81	.94	1.22
Methane	.26	.35	.32	.38	.35	.39
Ethylene	.45	1.15	.90	1.01	1.22	1.32
Acetylene	.53	1.15	1.16	1.20	2.00	2.96
Ethane	.54	1.15	1.16	1.36	1.50	1.54
Chlorodifluoromethane	1.22	4.32	5.61	5.61	10.99	13.88
Acetic Acid	.39	1.08	2.14	3.68	4.18	5.21
Propionic Acid	.65	2.42	4.75	9.05	9.11	10.68
Methanol	.24	.35	.39	.48	.61	.69
Ethanol	.30	.60	.63	.76	1.21	1.20
Benzene	.87	2.76	2.56	3.00	4.00	3.74
Toluene	1.33	5.72	5.31	6.41	8.54	7.61
Ethyl Benzene	2.09	11.60	10.69	12.98	17.58	15.05
o-Xylene	2.52	13.48	12.53	15.32	15.32	18.05
Methylene Chloride	.41	.98	.94	1.09	1.48	1.67
Carbon Tetrachloride	.75	2.87	2.42	2.98	3.49	3.04
Methyl Acetate	.38	1.01	.97	1.11	1.74	1.75
Ethylene Glycol	.94	2.39	3.36	4.19	9.34	12.43
Glycerol	4.92	19.15	-	-	-	-

**Operating conditions: 1m x 2.3 mm ID stainless steel column, 80/100 mesh, 175ºC, 25 mL/min helium flow; FID detector.*

Porapak Packings - Sold in bottles of approximately 75 cc

		Mesh Size		
Type	Weight, g	50/80	80/100	100/120
P	20	AUC489021	AUC489022	AUC489023
Q	26	AUC489054	AUC489055	AUC489066
R	24	AUC489088	AUC489009	AUC489010
S	26	AUC489011	AUC489012	AUC489013
N	29	AUC489001	AUC489002	AUC489003
T	31	AUC489018	AUC489019	AUC489020
QS*	26	AUC489014	AUC489015	AUC489016
PS*	20	AUC489004	AUC489005	AUC489006

**Silanized*

PACKING ACCESSORIES

Glass Wool; Quartz Wool

KONIK offers five kinds of glass or quartz wool, for nearly all chromatographic needs. These are recommended for use in injection liners, and as end plugs in packed columns. Glass wool is sold in 50 g quantities; quartz wool is sold in 10 g quantities.

Glass Wool

- Untreated - soft, fine-denier Pyrex® wool
- Silane Treated - treated with dimethyldichlorosilane (TMCS) to yield an inert material for all-around use
- Phosphoric Acid Treated - recommended for analysis of acidic compounds such as free acids, phenols and glycols
- HMDS Treated - a superior method of deactivation, using hexamethyldisilazne. Pesticide grade 10 g
- Quartz Wool - made from high purity quartz with low metal-oxide impurities. Ideal for use with injection port liners. Fibers have 9 µm nominal diameter

Description	Item No.
Untreated Glass Wool	AUC486315
Phosphoric Treated Glass Wool	AUC486316
Silane Treated Glass Wool	AUC486318
HMDS Treated Glass Wool, 10 g	AUC486319
Quartz Wool	AUC486320

Glass Wool Inserter

AUC486310

Used for inserting glass wool into packed columns. Simply wrap a small piece of glass wool around the tip to push it into the column.

Description	Item No.
Glass Wool Inserter	AUC486310

Glass Wool Puller

AUC486313

This is used for pulling glass wool out of packed columns, traps or injection port liners. It has a 1 1/4" spiral barb cut into the tip, which acts as a ratchet. For 1/4" to 2 mm IDs.

Description	Item No.
Glass Wool Puller	AUC486313

End Caps

Flexible and soft, to easily fit over the outside diameter of tubing. They are useful for sealing GC columns for storage.

Description	Qty.	Item No.
GC End Caps, 1/16"	100/pk	AUC205121
GC End Caps, 1/8"	100/pk	AUC205122
GC End Caps, (3/16") 5 mm	100/pk	AUC205123
GC End Caps, 1/4"	100/pk	AUC205124

GC End Caps

Vibrograver

Permanently engraves all hard and semi-hard surfaces; recommended for making column tags and tools. The etched information cannot be erased, wiped off, or rubbed out. Comes with a carbide tip.

Description	Voltage	Item No.
Vibrograver	110/120	AUC486211
Vibrograver	230/240	AUC486212
Spare Diamond Tip		AUC486213
Spare Carbide Tip		AUC486214

Vibrograver

Packed Column Change Kit

The Column Change Kit includes three ratchet wrenches, 7/16", 1/2" and 9/16"; one Imp® Tubing cutter, and one roll of 12.5 mm PTFE tape. The ratchet wrenches are ideal for tight spaces; the ratchet tips can be opened, then snapped closed around the fittings.

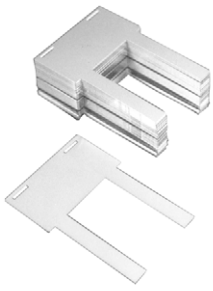
Description	Item No.
Column Change Kit	AUC205250

AUC205250

Column Tags, Aluminum

For packed columns; also useful for labeling computer cables, gas lines, etc. Aluminum tags are easy to inscribe and provided permanent record that cannot be erased. 22 mm x 41 mm.

Description	Qty.	Item No.
Packed Column Tags	100/pk	AUC486111



AUC486111