



Ellutia Column Catalogue

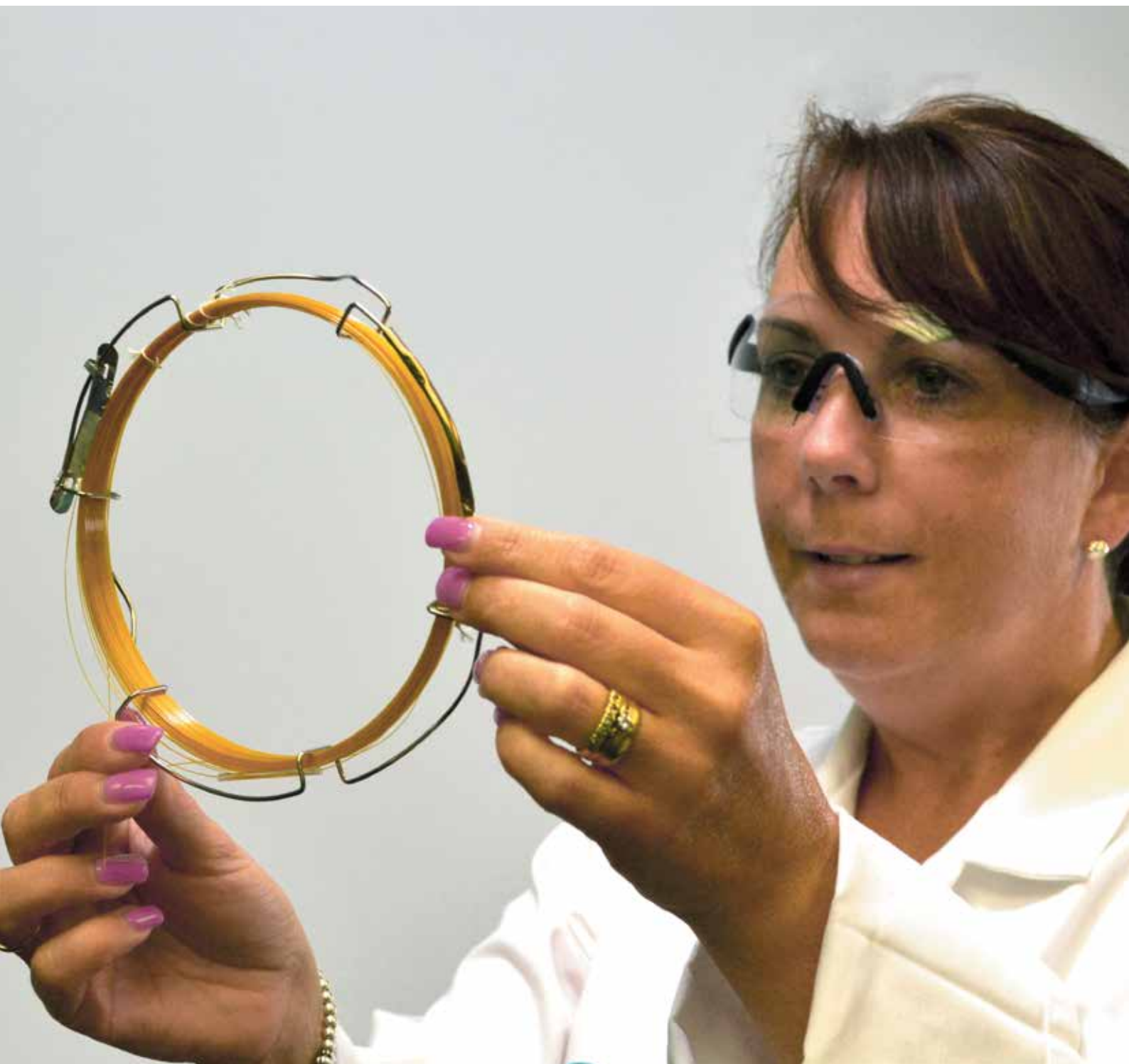




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About Ellutia

Ellutia design and produce a range of innovative gas chromatography instruments. Ellutia systems are designed to be smaller, faster, give greater sensitivity and be more energy efficient. Our main focus is to supply complete solutions to analytical problems. By collaborating closely with customers, Ellutia are able to produce, install and support customised systems to fit their exact requirements. This flexibility and customer focus sets Ellutia apart from the competition.

History

Ellutia originally started life as Cambridge scientific instruments. Formed in 1994, with a single employee. The goal was to build a company to offer unique chromatography equipment. Over the next 17 years Cambridge Scientific Instruments continued to grow and won various awards along the way for its innovative instrument design. In 2011 the company was re-branded as Ellutia with a greater focus on providing complete analytical solutions for customers.

Ellutia has continued to grow and now also has an divisions in Germany and USA as well as distributors around the world.

To find out more please visit us at www.ellutia.com for further information about the products we manufacture and sell.





Ellutia Columns

Ellutia offer a range of capillary columns that compliments the range of innovative products they manufacture and sell.

Ellutia GC columns of high temperature stability, exhibit low bleed and long lifetimes. We provide exceptional quality and performance with guaranteed reproducibility.

All of our columns are manufactured according to a strict established protocol.

Stage 1: Hyrdothermal Treatment

Stage 2: Deactivation Process

Stage 3: Wetting, Bonding and Crosslinking

Stage 4: Quality Control

Stage 1: Hydrothermal Treatment

The manufacturing process starts with selecting the highest quality of fused silica tubing. This tube presents an extremely tight tolerance of internal diameters and has a polyamide 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 characterised as an essential step to set the hydrothermal treatment conditions that will give rise to a surface containing a high and constant density of silanol groups, which will later be properly deactivated.

The 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 (~2000°C).

Stage 2: Deactivation Process

The deactivation process differs for each type of the stationary phases. It is carefully controlled to ensure that the tubing surface has acquired the necessary chemical inertness and surface tension to be able to proceed with the second stage of stationary phase deposition. This step 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.





Stage 3: Wetting, Bonding and Crosslinking

Stationary phase selection for optimum wetting of the column is a critical point in regards to column quality. In order to guarantee that our columns will respond to the high standards that our customers expect we use extremely pure polymers for its phases. This guarantees high levels 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.

The crosslinking and bonding of the stationary phase is achieved by avoiding the use of peroxides which are the cause of many 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 walls allows the recovery or regeneration of an accidentally contaminated column by washing it with the adequate series of solvents.

Stage 4: Quality Control

When you buy an Ellutia capillary column you will receive a product designed and manufactured with the aim to help you solve your analytical problems and which meets all of our quality criteria. Each column is individually tested, the accompanying test data is the proof that the column meets our quality specifications, therefore we expect it to meet your demands. Without exception, each one of the columns obtained by this process is rigorously controlled by means of a strict Quality control test, which certifies that you will receive a guaranteed quality product.





Stationary Phase

The polarity of the stationary phase is chosen depending on the kind of compounds you wish to separate. Non polar phases, such as EL-1 and EL-5, separate compounds by their boiling points. Medium polarity columns, such as EL-1701, combine retention by boiling point with the more selective interaction through hydrogen bridges or dipolar moments thus provide a higher selectivity. The principal mechanisms of polar phases such as ELR-CN100 lie in the dipole-dipole interactions between the functional groups of the stationary phase and those from the substances to be separated. These types of phases retain polar compounds more than non polar ones.

In general, non polar phases are more thermally stable than the polar phases. The higher the column polarity the lower the thermal stability. Most of the Ellutia columns are cross-linked resulting in high thermal stability. The cross-linking in a stationary produces slight changes in the physicochemical characteristics of the phase as well as in its polarity relative to the uncross-linked phase.

Length

The efficiency of a chromatographic column is a function of its length. The standard length used for most of the separations is 25-30 meters. This length can obtain a high efficiency with relative short times of analysis. Lengths of 15m are used for rapid control analyses and reaction monitoring. As for the chromatography of high molecular weight substances columns of 50-60m and 100m are commonly employed.

We can say that in a constant temperature chromatographic analysis, the number of theoretical plates and analysis time are directly proportional to the square root of the theoretical plates.

Internal Diameter

The column internal diameter is inversely proportional to its separation power. The smaller the diameter the larger the efficiency resulting in a higher resolution but at the same time the loading capacity decreases. Samples that contain a large number of substances where you may need a given resolution, it is recommended to use small internal diameter columns (0.20-0.25mm). For samples with a high range of concentrations higher internal diameter columns are recommended (0.32 - 0.53mm) since these larger diameters allow for the injection of a higher sample amount.

The 0.32-0.53mm ID columns can be used with either the injector for capillary columns or with the packed column injector. This is due to the high flow-rates at which they can operate.





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 μ m 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. Thin films (0.1 μ m) must be used for compounds with a high molecular weight such as triglycerides, antioxidants which must 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 μ m films are used to separate solvents, gases and very volatile substances at room temperature or lower.

When the thickness of the stationary phase increases the thermal stability decreases resulting in a higher bleed level, which will limit the maximum operating temperature of the column.





Bleed Level

For a given assay the level of sensitivity is directly related to the amount of stationary phase in the column and with the film thickness. It also increases exponentially with temperature.

A low bleed level will allow you to work without problems along the whole range of modern high sensitivity detectors, also 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 analysed by means of high temperature gradients.

Maximum Efficiency

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

Maximum Reproducibility

When you have chosen an Ellutia column for your analyses, you can be assured that each one of the steps in the production process has been thoroughly controlled to ensure that there are no deviations from the established quality parameters.

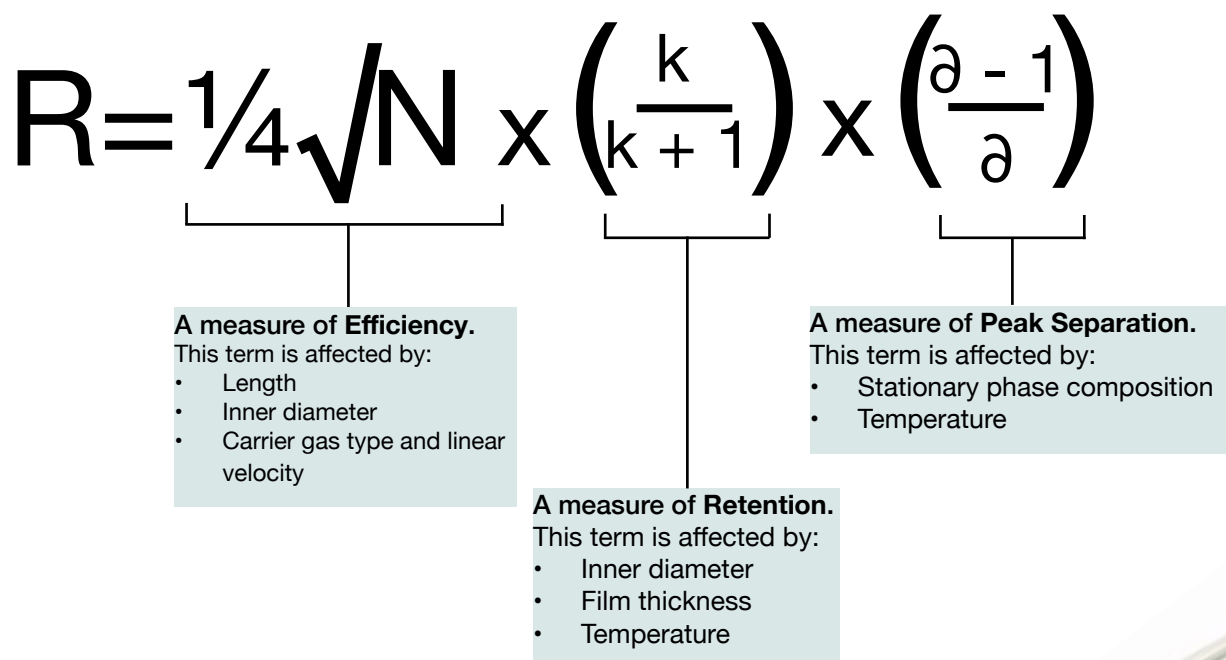




Choosing the right column

Strategic column choices can improve lab productivity by assuring that speed and resolution are optimised. While the number of choices available can be discouraging, consideration of the resolution equation variables (separation factor, retention (capacity) factor, and efficiency) simplifies the decision.

Separation factor determines which stationary phase is most appropriate. Once the phase has been chosen, physical dimensions (inner diameter, film thickness, length) can be selected based on retention factor and efficiency. Understanding how separation factor, retention factor, and efficiencies influence separations allows analysts to make effective, informed choices and quickly select the best column for specific separations.



N = L/H = Effective theoretical plate number
 L = Column Length
 H = HETP = Height equivalent to a theoretical plate
 k = Retention factor
 α = Separation factor
 Baseline resolution (R = 1.5) is the goal





Stationary Phase Cross Reference Table

ELLUTIA	PHASE COMPOSITION	AGILENT	SUPELCO	RESTEK	VARIAN	TRAJAN	ALLTECH	QUADREX	PHENOMENEX	MACHERY-NAGEL	TEKNOKROMA	Page Number
EL-1	100% dimethyl polysiloxane	HP-1, HP-101, Ultra-1, DB-1	SPB-1, Equity-1	Rtx-1	CP-Sil 5 CB	BP-1	AT-1	007-1	ZB-1	Optima-1	TRB-1	16
EL-1ht		DB-1ht		Six-1HT			AT-1 ht		ZB-1ht		TRB-1ht	19
EL-1ht SimDist		DB-1ht SimDist		MXt-1 SimDist	CP-SimDist						TRB-1ht SimDist	20
EL-1MS		HP-1MS, DB-1MS	EQUITY-1	Rtx-1ms, Rtx-1ms	VF-1ms, CP-sil 5 CB MS		AT-1 ms		ZB-1ms	Optima-1ms	TRB-1MS	21
EL-SULPHUR			SPB-1Sulfur		CP-select CB for Sulfur						TRB-SULPHUR	26
EL-2887		DB-2887	Petrocol-2887	Rtx-2887							TRB-2887	23
EL-PETROL		DB-PETRO	Petrocol-DH	Rtx-1 PONA							TRB-PETROL	24
EL-PETRO.150			Petrocol-DH 150								TRB-PETRO.128	24
EL-5	95% dimethyl-5% diphenyl polysiloxane	HP-5, Ultra-2, DB-5	SPB-5, Equity-5	Rtx-5	CP-SIL 8 CB	BP-5	AT-5	007-2	ZB-5	Optima-5	TRB-5	27
EL-5ht		DB-5ht							ZB-5ht		TRB-5ht	30
EL-5ms		HP-5MS, PAS-5	Equity-5	Rtx-5 MS, Rtx-5ms	VF-5ms, CP-Sil 8 CB MS				ZB-5ms	Optima-5ms	TRB-5MS	32
EL-STEROL			SAC-5								TRB-STEROL	31
EL-5 AMINE			PTA-5	Rtx-5Amine	CP-Sil 8 CB MS					Optima-5 Amine	TRB-5 AMINE	33
EL-G27			G27	Rtx-G27							TRB-G27	35
ELI-5		HP-5msi	PTE-5	Rtx-5ms							MTI-5	37
ELIM-X5	95% dimethyl-5% polysilphenylene	HP-5TA, DB-5MS	MDN-5, SLB-5ms	Rxi-5SIL MS	CP-Sil 8 CB Low bleed/ MS VF-5ms	BPX-5	AT-5ms	007-5 MS	ZB-5ms	Optima-5 Accent	Meta.X5	36
ELIM-XLB	Proprietary Bonded Phase	DB-XLB	MDN-12	Rxi-XLB	VF-Xms				ZB-XLB	OPTIMA XLB	Meta.XLB	38
EL-1301	6% cyanopropylphenyl-94% dimethyl polysiloxane	HP-1301, HP-624	SPB-1301, OVI-43	Rtx-1301, Rtx-624	CP-Select 624 CB	BPX-624	AT-624		ZB-624	Optima-1301	TRB-1301, TRB-624	39
EL-14	14% diphenyl-86% dimethyl polysiloxane				CP-Sil 13 CB						TRB-14	42
EL-20	20% diphenyl-80% dimethyl polysiloxane		SPB-20, VOCOL	Rtx-20			AT-20	007-7			TRB-20	43
EL-35	35% diphenyl-65% dimethyl polysiloxane	HP-35, DB-35	SPB-35	Rtx-35		BPX-35, BPX-608	AT-35	007-11	ZB-35		TRB-35	47



Stationary Phase Cross Reference Table

ELLUTIA	PHASE COMPOSITION	AGILENT	SUPELCO	RESTEK	VARIAN	TRAJAN	ALLTECH	QUADREX	PHENOMENEX	MACHEREY-NAGEL	TEKNOKROMA	Page Number
EL-1701	14% cyanopropylphenyl-86% dimethyl polysiloxane	HP-1701, PAS-1701, DB-1701	SPB-1701	Rtx-1701	CP-Sil 19 CB	BP-10	AT-1701	007-1701	ZB-1701	Optima-1701	TRB-1701	44
EL-225	50% cyanopropylphenyl-50% dimethyl polysiloxane	HP-225, DB-225		Rtx-225	CP-Sil 43 CB	BP-225	AT-225	007-225		Optima-225	TRB-225	46
EL-PAG	50% polyethylene-50% propylenglycol		PAG								TRB-PAG	53
EL-FFAP	treated polyethyleneglycol for acidic compounds	HP-FFAP, DB-FFAP	Nukol, SP-100	Stabilwax-DA	CP-wax 58 CB	BP-21	AT-1000, FFAP	007-FFAP		PermaBond FFAP	TRB-FFAP	55
EL-50	50% diphenyl-50%dimethyl polysiloxane	HP-50+, DB-17, DB-608	SPB-50, SPB-2250	Rtx-50, Rxi-17	CP-Sil 24 CB		AT-50	007-17	ZB-50	Optima-17	TRB-50	48
EL-50ht	50% diphenyl-50%dimethyl polysiloxane	DB17ht		Rtx-65	TAB-CB			007-65HT			TRB-50ht	49
EL-F50	50% trifluoropropylmethyl polysiloxane	DB-210, DB-200		Rtx-200			AT-210	007-210		Optima-210	TRB-F50	52
EL-WAX	100% polyethyleneglycol	HP-20M, HP-inowax DB-wax, DB-waxetr	Supelcowax-10, Carbowax 20M	Stabilwax	CP-wax 52 CB	BP-20	AT-wax	007-CW	ZB-wax	PermaBond CW 20M	TRB-WAX	54
ELWAX-280	100% polyethyleneglycol		Supelcowax-10								SupraWAX-280	58
EL-WAX.DB	treated polyethyleneglycol for basic compounds	CAM, HP-Basicwax	Carbo-wax-Amine	Stabilwax-DB	CP-wax 51 CB						TRB-WAX-DB	56
ELM-WAX	100% polyethyleneglycol	HP-wax, DB-wax			CP-wax 57 CB						Meta.Wax	57
ELR-WAX-Omega	100% polyethyleneglycol										TRB.WAX.Omega	59
ELR-CN100	100% biscyanopropyl polysiloxane		SP-2340	Rt-2340	CP-Sil 88	BPX-70, BPX-90					TRB-CN100	60
ELR-CRESOL	not bonded phase				CP-Cresol						TR-Cresol	34
EL-17	50% diphenyl-50%dimethyl polysiloxane	HP-17										43
ELM.VOC	propriety bonded phase	DB-502.2, HP-VOC	Vocol	Rtx-502.2								50
ELM.BLOOD1	propriety bonded phase	DB-ALC1		Rtx-BAC1							Meta.Blood 1	51
ELM.BLOOD2	propriety bonded phase	DB-ALC2		Rtx-BAC2							Meta.Blood 2	51
EL-BIDIESEL	propriety bonded phase	DB-5ht		Rtx-Biodiesel	Select Biodiesel			400-5ht	ZB-5ht		TRB-BIDIESEL	25



Ellutia Capillary Columns

EL-1

100% Dimethyl polysiloxane, bonded and crosslinked phase

- 100% Dimethyl polysiloxane
- Non-polar phase
- Column for general use
- High thermal stability
- Ideal column for the analysis of petrochemical products and industrial solvents.

EL-1 Equivalent Phase

Agilent: HP-1, HP101, ULTRA-1, DB-1

Supelco: SPB-1, EQUALITY-1

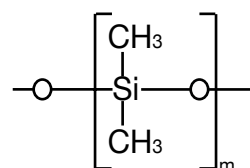
Restek: Rtx-1, Rtx-2887

Varian: CP-SIL 5 CB

Alltech: AT-1

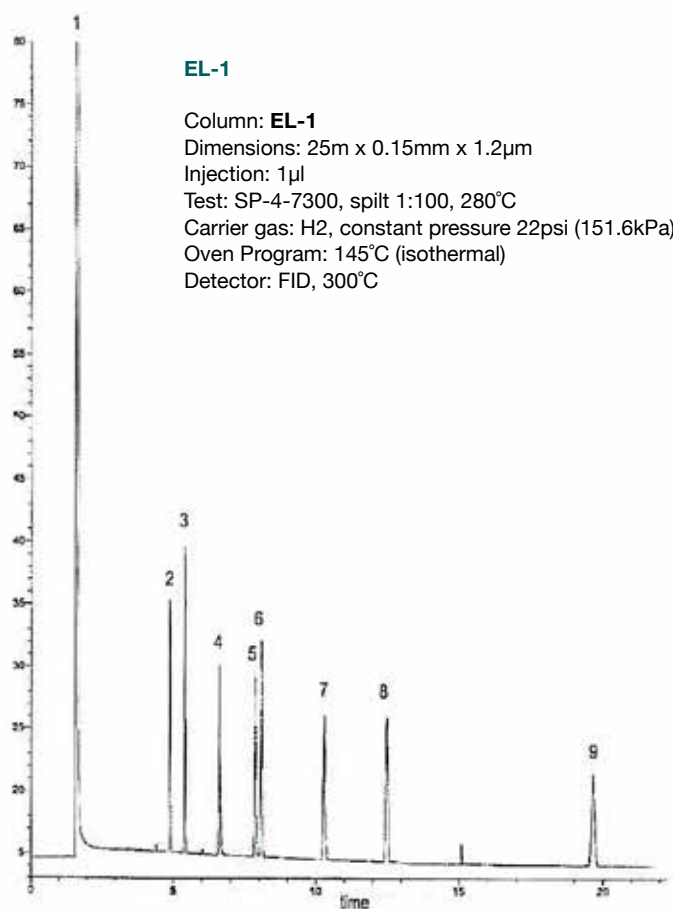
Macherey-Nagel: OPTIMA-1

Structure of Dimethyl Polysiloxane



Peak Name

1. Methylene Chloride
2. 2-Octanone
3. C-10
4. 1-Octanol
5. 2,6-Dimethylphenol
6. C-11
7. 2,6-Dimethylaniline
8. C-12
9. C-13



Ellutia Capillary Columns



EL-1

Internal Diam(mm)	Length (m)	Film (Thickness µm)	Temp Limits (°C)	Part no.	Internal Diam(mm)	Length (m)	Film (Thickness µm)	Temp Limits (°C)	Part no.
0.10	10	0.10	-60 to 325/350	51100022	0.25	50	0.10	-60 to 325/350	51100023
	10	0.40	-60 to 320/340	51100046		50	0.25	-60 to 325/350	51100036
	20	0.10	-60 to 325/350	51100029		50	0.33	-60 to 325/350	51100043
	20	0.40	-60 to 320/340	51100048		50	0.50	-60 to 325/350	51100064
	40	0.20	-60 to 325/350	51100104		50	1.00	-60 to 320/340	51100085
	40	0.40	-60 to 320/340	51100050		60	0.10	-60 to 325/350	51100026
0.18	50	0.12	-60 to 325/350	51100073	60	0.25	-60 to 325/350	51100038	
	10	0.18	-60 to 325/350	51100077	60	0.50	-60 to 325/350	51100068	
	10	0.20	-60 to 325/350	51100103	60	1.00	-60 to 325/350	51100087	
	10	0.40	-60 to 325/350	51100047	100	1.00	-60 to 325/350	51100089	
	20	0.18	-60 to 325/350	51100078	105	1.00	-60 to 325/350	51100091	
	20	0.40	-60 to 325/350	51100049	0.32	15	0.10	-60 to 325/350	51100014
40	0.40	-60 to 325/350	51100051	15		0.25	-60 to 325/350	51100031	
0.20	12	0.33	-60 to 325/350	51100122		15	0.50	-60 to 325/350	51100053
	15	0.15	-60 to 325/350	51100092		15	1.00	-60 to 325/350	51100080
	15	0.33	-60 to 325/350	51100040		15	3.00	-60 to 280/300	51100107
	15	0.50	-60 to 325/350	51100055		25	0.10	-60 to 325/350	51100017
	25	0.15	-60 to 325/350	51100093	25	0.25	-60 to 325/350	51100033	
	25	0.33	-60 to 325/350	51100120	25	0.50	-60 to 325/350	51100057	
25	0.35	-60 to 325/350	51100041	25	0.52	-60 to 325/350	51100132		
25	0.50	-60 to 325/350	51100059	25	1.00	-60 to 325/350	51100082		
30	0.15	-60 to 325/350	51100094	25	3.00	-60 to 280/300	51100109		
30	0.35	-60 to 325/350	51100042	30	0.10	-60 to 325/350	51100020		
30	0.50	-60 to 325/350	51100063	30	0.25	-60 to 325/350	51100035		
50	0.15	-60 to 325/350	51100095	30	0.50	-60 to 325/350	51100061		
50	0.33	-60 to 325/350	51100121	30	1.00	-60 to 325/350	51100084		
50	0.35	-60 to 325/350	51100044	30	3.00	-60 to 280/300	51100111		
60	0.15	-60 to 325/350	51100096	30	1.50	-60 to 325/350	51100099		
60	0.35	-60 to 325/350	51100045	50	0.10	-60 to 325/350	51100024		
60	0.50	-60 to 325/350	51100071	50	0.25	-60 to 325/350	51100037		
0.25	15	0.10	-60 to 325/350	51100013	50	0.50	-60 to 325/350	51100065	
	15	0.25	-60 to 325/350	51100030	50	1.00	-60 to 325/350	51100086	
	15	0.50	-60 to 325/350	51100052	50	3.00	-60 to 280/300	51100114	
	15	1.00	-60 to 325/350	51100079	60	0.10	-60 to 325/350	51100027	
	25	0.10	-60 to 325/350	51100016	60	0.25	-60 to 325/350	51100039	
	25	0.25	-60 to 325/350	51100032	60	0.50	-60 to 325/350	51100069	
25	0.50	-60 to 325/350	51100056	60	1.00	-60 to 325/350	51100088		
25	1.00	-60 to 325/350	51100081	60	3.00	-60 to 280/300	51100116		
30	0.10	-60 to 325/350	51100019	60	5.00	-60 to 260/280	51100129		
30	0.25	-60 to 325/350	51100034	0.53	10	0.8	-60 to 325/350	51100075	
30	0.50	-60 to 325/350	51100060		10	2.65	-60 to 300/310	51100106	
30	1.00	-60 to 325/350	51100083		10	3.00	-60 to 325/350	51100113	

Non-Polar



Ellutia Capillary Columns

EL-1

Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits ($^{\circ}\text{C}$)	Part no.	Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits ($^{\circ}\text{C}$)	Part no.
0.53	10	5.00	-60 to 325/350	51100127	0.53	30	3.00	-60 to 270/290	51100112
	15	0.10	-60 to 320/340	51100015		30	5.00	-60 to 270/290	51100126
	15	0.50	-60 to 320/340	51100054		30	7.00	-60 to 260/280	51100134
	15	1.50	-60 to 310/330	51100097		50	0.10	-60 to 320/340	51100025
	15	3.00	-60 to 270/290	51100108		50	0.50	-60 to 320/340	51100066
	15	5.00	-60 to 270/290	51100124		50	0.88	-60 to 325/350	51100076
	15	7.00	-60 to 260/280	51100133		50	1.50	-60 to 310/330	51100101
	25	0.10	-60 to 320/340	51100018		50	3.00	-60 to 270/290	51100115
	25	0.50	-60 to 320/340	51100058		50	5.00	-60 to 270/290	51100128
	25	1.50	-60 to 310/330	51100098		60	0.10	-60 to 320/340	51100028
	25	3.00	-60 to 270/290	51100110		60	0.50	-60 to 320/340	51100070
	25	5.00	-60 to 270/290	51100125		60	1.50	-60 to 310/330	51100102
	30	0.10	-60 to 320/340	51100021		60	3.00	-60 to 270/290	51100117
	30	0.50	-60 to 320/340	51100062		60	5.00	-60 to 270/290	51100130
	30	0.88	-60 to 310/330	51100074		60	7.00	-60 to 240/260	51100135
	30	1.50	-60 to 310/330	51100100		75	5.00	-60 to 325/350	51100131
30	2.65	-60 to 270/290	51100105	100	3.00	-60 to 270/290	51100118		
				105	3.00	-60 to 270/280	51100119		





EL-1ht

100% Dimethyl polysiloxane, bonded and cross-linked phase.

- 100% Dimethyl polysiloxane
- Non-polar phase
- Produced specially for high temperature analyses (Max. Temp 400°C)
- Fused silica tubing with polyimide coating for high temperatures
- Uses: Analysis of compounds with high boiling point, tryglycerides, waxes, etc.

EL-1ht Equivalent Phase

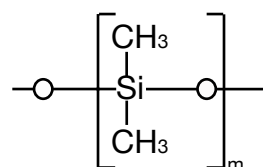
Agilent: DB-1ht

Restek: Stx-1HT

Alltech: AT-1 ht

Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits (°C)	Part no.
0.25	15	0.10	-60 to 400	51100708
	30	0.10	-60 to 400	51100709
0.32	15	0.10	-60 to 400	51100710
	30	0.10	-60 to 400	51100711

Structure of Dimethyl Polysiloxane



EL-1ht

Column: **EL-1ht** + Retention Gap (intermediate polarity) 5m x 0.53mm

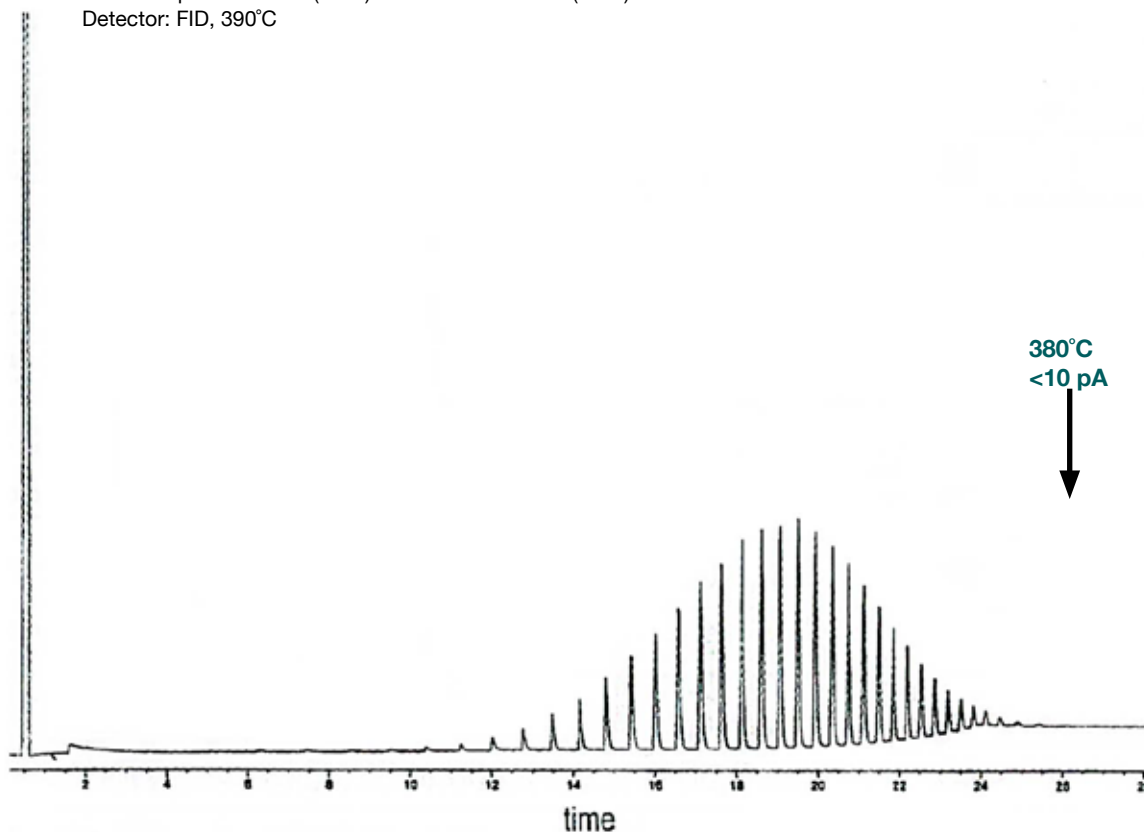
Dimensions: 15m x 0.32mm x 0.10 μm

Injection: 0.3 μl Poliwax 655 (0.1% in CS₂), on column (sec.cool 30 s), 280°C

Carrier gas: H₂, constant flow 2mL/min

Oven Temperature: 50°C(2min) @ 15°C/min to 380°C(5min)

Detector: FID, 390°C



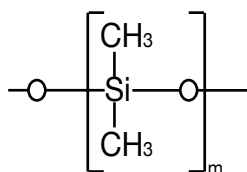


EL-1ht SimDist

100% Dimethyl polysiloxane, bonded, and cross-linked phase

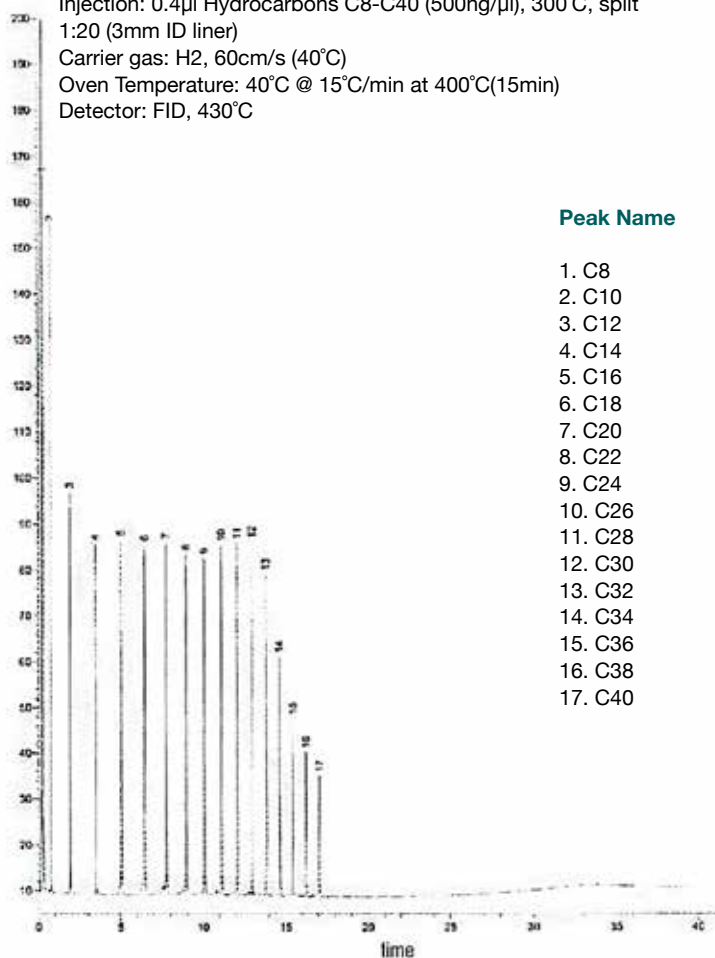
- 100% Dimethyl polysiloxane, bonded and cross-linked phase
- True methyl silicone polarity
- Unbreakable, specially treated stainless steel
- Maximum temperature 430°C
- Low bleed at 400°C (typical values of 4-6pA)
- Distillation range C6 to C120

Structure of Dimethyl Polysiloxane



EL-1ht SimDist

ColumnL EL-1ht SimDist
 Dimesions: 5m x 0.53mm x 0.10µm
 Injection: 0.4µl Hydrocarbons C8-C40 (500ng/µl), 300°C, split 1:20 (3mm ID liner)
 Carrier gas: H₂, 60cm/s (40°C)
 Oven Temperature: 40°C @ 15°C/min at 400°C(15min)
 Detector: FID, 430°C



Peak Name

1. C8
2. C10
3. C12
4. C14
5. C16
6. C18
7. C20
8. C22
9. C24
10. C26
11. C28
12. C30
13. C32
14. C34
15. C36
16. C38
17. C40

Internal Diam(mm)	Length (m)	Film (Thickness µm)	Temp Limits (°C)	Part no.
0.53	5	0.10	-60 to 400/430	51100415
	5	0.15	-60 to 400/430	51100420
	5	0.17	-60 to 400/430	51100424
	5	0.88	-60 to 400/430	51100418
	5	2.65	-60 to 400/430	51100426
	10	0.17	-60 to 400/430	51100421
	10	0.50	-60 to 400/430	51100416
	10	0.88	-60 to 400/430	51100417
	10	1.2	-60 to 400/430	51100419
	10	2.65	-60 to 400/430	51100425
10	5.00	-60 to 400/430	51100427	



EL-1MS

100% Dimethyl polysiloxane, bonded and cross-linked phase.

- 100% Dimethyl polysiloxane, bonded and cross-linked phase.
- These columns, with selectivity identical to the EL-1, fulfil column bleed specifications that make them compatible with analysis of trace compounds with GC/MS. Therefore, the standard column of 30m x 0.25mm x 0.25µm has a guaranteed maximum bleed of 4 pA at 325°C
- Great chemical inertness towards active constituents and excellent thermal stability
- Improved signal/noise ratio, which enables greater sensitivity to be obtained with the MS, ECD, NPD, SCD etc, detectors and provides greater precision in quantitative analysis at trace levels
- Less column bleed mean less detectors contamination and greater speed in conditioning columns

EL-1MS Equivalent phase

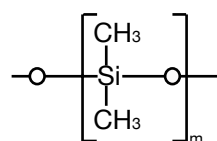
Agilent: HP-1MS, DB-1MS

Restek: Rtx-1ms, Rxi-1ms

Varian: CP-SIL 5 CB MS, VF 1MS

Alltech: AT-1 MS

Structure of Dimethyl Polysiloxane



EL-1MS

Column: EL-1MS

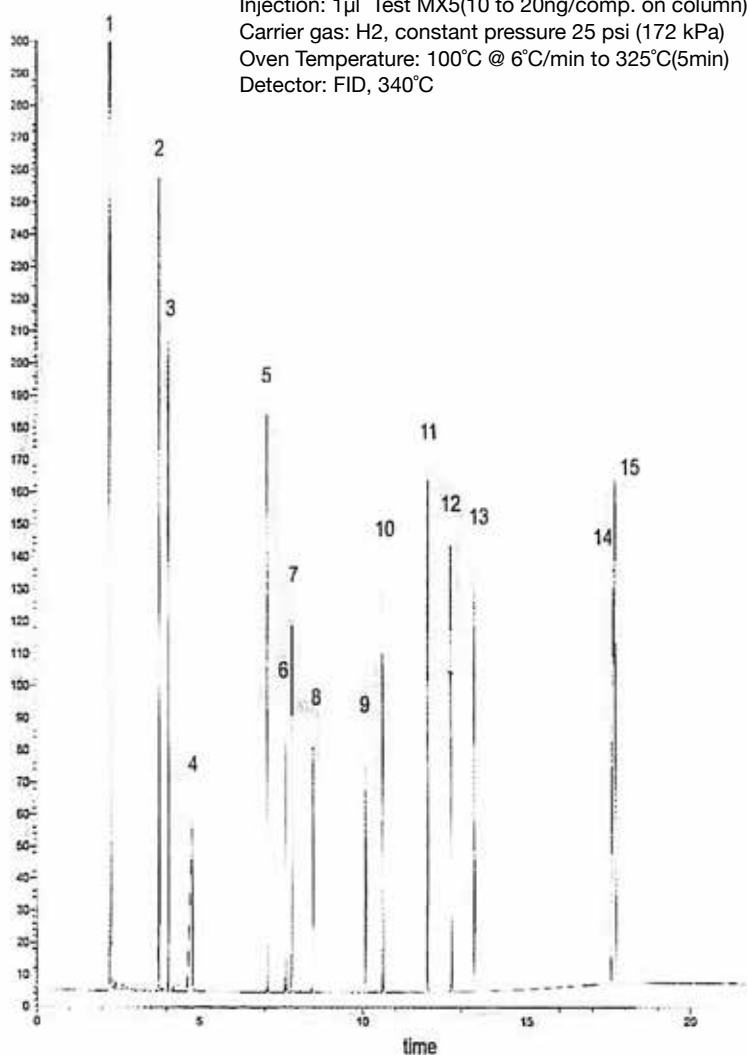
Dimensions: 60m x 0.25mm x 0.25µm

Injection: 1µl Test MX5(10 to 20ng/comp. on column), split 1:100, 280°C

Carrier gas: H₂, constant pressure 25 psi (172 kPa)

Oven Temperature: 100°C @ 6°C/min to 325°C(5min)

Detector: FID, 340°C



Peak Name

1. Methylene chloride
2. 1,2-Hexanediol
3. Nitroso-di-n-propylamine
4. Benzoic acid
5. C-14
6. 2,4-Dinitrophenol
7. 4-Nitrophenol
8. 4-Nitroaniline
9. Pentachlorophenol
10. Carbazole
11. C-20
12. C-21
13. C-22
14. Benzo(b)fluoranthene
15. Benzo(k)fluoranthene



Ellutia Capillary Columns

Non-Polar

EL-1MS

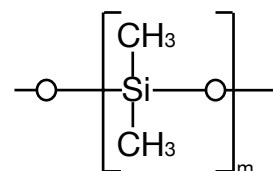
Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits ($^{\circ}\text{C}$)	Part no.	Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits ($^{\circ}\text{C}$)	Part no.
0.10	10	0.10	-60 to 325/350	51100589	0.25	60	0.25	-60 to 325/350	51100596
	10	0.40	-60 to 325/350	51100599		60	1.00	-60 to 325/350	51100614
	20	0.10	-60 to 325/350	51100600	0.32	15	0.25	-60 to 325/350	51100592
	20	0.40	-60 to 325/350	51100590		15	0.50	-60 to 325/350	51100601
0.18	20	0.18	-60 to 325/350	51100606		15	1.00	-60 to 325/350	51100609
	40	0.18	-60 to 325/350	51100607		30	0.25	-60 to 325/350	51100594
0.20	12	0.33	-60 to 325/350	51100623		30	0.50	-60 to 325/350	51100603
	15	0.33	-60 to 325/350	51100618		30	1.00	-60 to 325/350	51100612
	25	0.33	-60 to 325/350	51100619		50	0.25	-60 to 325/350	51100595
	30	0.33	-60 to 325/350	51100620		60	0.25	-60 to 325/350	51100597
	50	0.33	-60 to 325/350	51100621		60	0.50	-60 to 325/350	51100605
	60	0.33	-60 to 325/350	51100622		60	1.00	-60 to 325/350	51100615
0.25	15	0.25	-60 to 325/350	51100591	0.53	15	0.50	-60 to 320/340	51100602
	15	1.00	-60 to 325/350	51100608		15	1.00	-60 to 320/340	51100610
	30	0.25	-60 to 325/350	51100593		15	1.50	-60 to 310/330	51100616
	30	0.40	-60 to 325/350	51100598		30	0.50	-60 to 320/340	51100604
	30	1.00	-60 to 325/350	51100611		30	1.00	-60 to 320/340	51100613
					30	1.50	-60 to 310/330	51100617	

EL-50.2PONA

100% Dimethyl polysiloxane, bonded and cross-linked phase.

- 100% Dimethyl polysiloxane
- Column designed for the complete analysis of PONA hydrocarbons (P-Paraffins, O-Olefins, N-Napthenes and A-Aromatics) in petrol derived products according to the ASTM regulations, method D5134

Structure of Dimethyl Polysiloxane



Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits ($^{\circ}\text{C}$)	Part no.
0.20	50	0.50	-60 to 320/340	51100067

EL-50.2PONA Equivalent Phase.

Aglient: HP-PONA
Supelco: Petrocol DH 50.2
Restek: Rtx-1 PONA
Varian: CP-SIL PONA CB
Trajan: BP-1 PONA

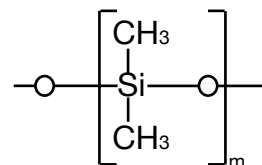


EL-2887

100% Dimethyl polysiloxane, bonded and cross-linked phase.

- 100% Dimethyl polysiloxane
- Designed specifically for simulated distillation according to the ASTM method D2887

Structure of Dimethyl Polysiloxane



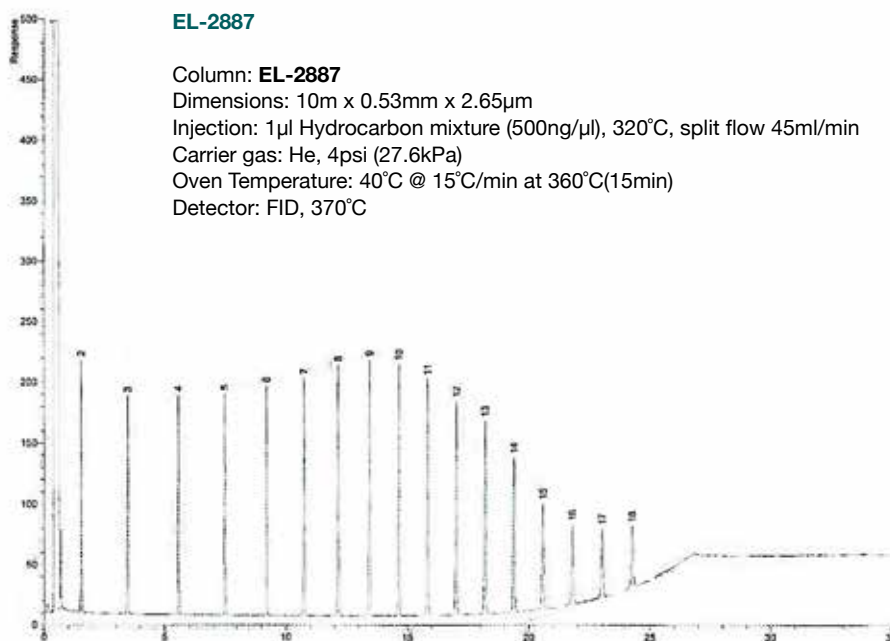
EL-2287 Equivalent Phase

Agilent: DB-2887

Supelco: PETROCOL-2887

Restek: Rtx-2887

Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits ($^{\circ}\text{C}$)	Part no.
0.53	10	2.65	-60 to 340/360	51100359



Peak Name

1. n-hexane
2. C-8
3. C-10
4. C-12
5. C-14
6. C-16
7. C-18
8. C-20
9. C-22
10. C-24
11. C-26
12. C-28
13. C-30
14. C-32
15. C-34
16. C-36
17. C-38
18. C-40



Ellutia Capillary Columns

Non-Polar

EL-PETROL

100% Dimethyl polysiloxane, bonded and cross-linked phase.

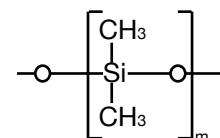
- 100% Dimethyl polysiloxane
- Column for analysing complex mixtures of hydrocarbons according to the ASTM regulations.
- Sufficient resolution power to undertake PNA, PONA and PIANO analysis

Structure of Dimethyl Polysiloxane

EL-PETROL Equivalent Phase

Agilent: DB-Petro

Supelco: Petrocol DH



Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits ($^{\circ}\text{C}$)	Part no.
0.25	100	0.50	-60 to 300/320	51100072

EL-PETROL

Column: **EL-PETROL**, 100m x 0.25mm x 0.50 μm

Temperature: 60 $^{\circ}\text{C}$ (isothermal)

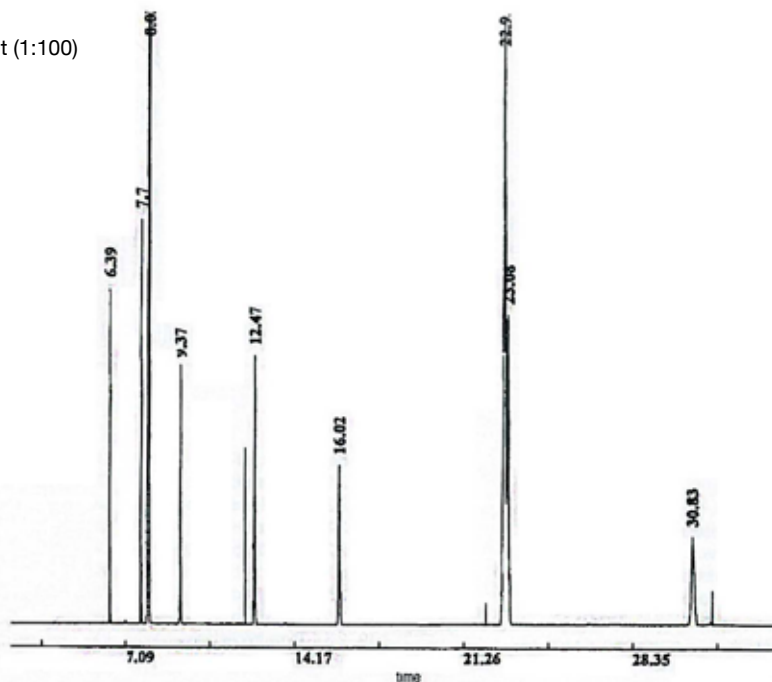
Injector: 260 $^{\circ}\text{C}$

Carrier gas: H₂, 34 psi

Injection: Test for hydrocarbons, split (1:100)

Detector: FID, 260 $^{\circ}\text{C}$

tr (min)	Compound
6.39	n-Hexane
7.70	Benzene
8.03	Cyclohexane
9.37	n-Heptane
12.47	Toluene
16.02	n-Octane
22.93	m-Xylene
23.08	p-Xylene
30.83	n-Nonane

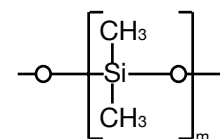


EL-PETRO.150

100% Dimethyl polysiloxane, bonded and cross-linked phase

- 100% Dimethyl polysiloxane
- Maximum resistance for hydrocarbon analysis

Structure of Dimethyl Polysiloxane



Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits ($^{\circ}\text{C}$)	Part no.
0.25	150	0.25	-60 to 300/320	51100090

EL-PETRO.150 Equivalent Phase

Supelco: Petrocol DH 150



EL-SULFUR

100% Dimethyl polysiloxane, bonded and cross-linked phase.

- 100% Dimethyl polysiloxane
- Column specially designed for the analysis of sulfurous compounds (in natural gas, petrol derivatives, wines, beer etc)
- Guaranteed thermal stability, with low column bleed

EL-SULFUR Equivalent Phase

Supelco: SPB-1 SULFUR

Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits ($^{\circ}\text{C}$)	Part no.
0.32	30	4.00	-60 to 270/290	51100123





Ellutia Capillary Columns

Non-Polar

EL-BIODIESEL

- Glycerin and Mono, Di, Triglycerides analysis tested under EN14105/ASTM D6584 methods
- Chemical inertness guaranteed for a good response for glycerin analysis
- Low column bleed at high temperature
- Two columns, silica (high temperature polyimide) and stainless steel (INOX)

Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits ($^{\circ}\text{C}$)	Part no.
0.28 INOX	10 + 2m x 0.53mm precolumn attached using INOX connector	0.10	400	51100913
0.32 Fused Silica	10 + 2m x 0.53mm precolumn attached using INOX connector	0.10	400	51100914

ELS-1MS

100% Dimethyl polysiloxane, bonded and cross-linked ultra-inert phase.

- Non-polar phase with selectivity identical to EL-1 but with excellent chemical inertness making it ideal for trace analysis and GC/MS
- Specifically tested for chemical inertness towards active compounds with excellent thermal stability
- Minimum peak tailing for active analytes with minimal compound loss and degradation
- Improved signal/noise ratio for greater sensitivity and mass spectral integrity
- Greater precision for quantitative analysis at trace levels
- Less column bleed reduces detector contamination and maintenance, and enables faster column conditioning

Sapiens-1MS Equivalent Phase:

- Agilent:** DB1-ms Ultra Inert, HP-1ms Ultra Inert, VF-1ms
- Restek:** Rxi-1ms
- Phenomenex:** ZB-1ms
- GL Sciences:** InertCap 1ms
- Sigma-Aldrich:** Equity-1
- SGE:** Sol-Gel-1ms, BPX-1
- Macherey-Nagel:** Optima-1ms Accent

Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits ($^{\circ}\text{C}$)	Part no.
0.10	10	0.10	-60 to 325/350 $^{\circ}\text{C}$	51100916
0.18	20	0.18	-60 to 325/350 $^{\circ}\text{C}$	51100917
	20	0.36	-60 to 325/350 $^{\circ}\text{C}$	51100918
0.25	15	0.25	-60 to 325/350 $^{\circ}\text{C}$	51100919
	30	0.25	-60 to 325/350 $^{\circ}\text{C}$	51100920
	60	0.25	-60 to 325/350 $^{\circ}\text{C}$	51100921
0.32	15	0.25	-60 to 325/350 $^{\circ}\text{C}$	51100922
	30	0.25	-60 to 325/350 $^{\circ}\text{C}$	51100923



ELI-5

(5%) Phenyl-(95%) Methylpolysiloxane, bonded and crosslinked phase.

- Polarity equivalent to Supelco PTE-5 and Agilent HP-5Msi columns.
- Non polar column maximum inertness and ultra low bleeding.
- Column contrasted for analyses of semivolatile contaminant agents (EPA 625, 1625, 8770).
- Maximum thermal stability (360°).

ELI-5 Equivalent Phase
Supelco: PTE-5
Agilent: HP-5Msi

Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits ($^{\circ}\text{C}$)	Part no.
0.25	30	0.25	-60 to 360	51100882
0.32	30	0.25	-60 to 360	51100883
0.53	15	0.5	-60 to 330/360	51100884



ELM.Amine-VOL

- For separation of volatile amines (optimised separation)
- Fully compatible with water samples
- High temperature stability
- Good peak shape for volatile alcohols

Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits ($^{\circ}\text{C}$)	Part no.
0.32	15	5.0	260 to 280	51100716
	30	5.0	260 to 280	51100717
	60	5.0	260 to 280	51100718

ELM. Amine-VOL Equivalent Phase

Varian: CP-Volamine



Ellutia Capillary Columns

EL-5

(95%) Dimethyl-(5%) diphenylpolysiloxane, bonded and cross-linked phase.

- It is the most versatile and universal stationary phase in the gas chromatography analysis field
- The low percentage of phenyl in the polymer structure gives it a characteristic affinity towards the compounds with aromatic rings. Due to its great thermal stability and chemical inertness, this stationary phase is the choice for any type of analysis
- It allows for the analysis of acidic and basic compounds
- It is ideal for the analysis in the environmental field. Analysis of dioxines, PCB's, PCT's, polyaromatic compounds, phenols, herbicides, organochlorinated and organophosphorus pesticides, aromatic hydrocarbons, solvents, drugs, oils etc.

EL-5 Equivalent Phase.

Restek: Rtx-5

Agilent/JW: HP-5 Ultra-2, DB-5, DB-5.625

Supelco: SPB-5, PT E-5, SAC-5, Equity-5

Chromopack/ Varian: CP- SIL8CB

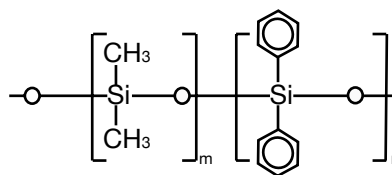
Alltech: AT-5

Macherey-Nagel: OPTIMA-5

Quadrex: 007-2

Trajan: BP-5

Structure of (95%) Dimethyl-(5%) diphenylpolysiloxane



Slightly Polar

EL-5

Column: **EL-5**

Dimensions: 30m x 0.25mm x 0.25µm

Injection: 1µl chlorinated pesticides mixture, splitless @ 230°C (25-270ppb on column)

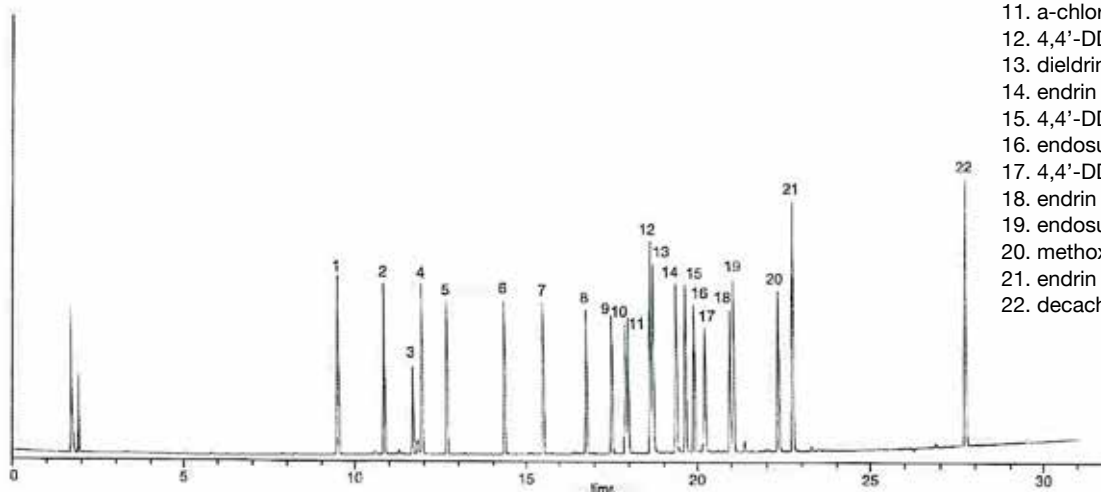
Carrier gas: H₂, constant pressure 12psi (87.7kPa) 150°C

Oven Temperature: 150°C to 225°C @ 225°C @ 2°C/min (10min)

Detector: ECD, 310°C

Peak Name

1. 2,4,5,6-tetrachloro-m-xylene
2. γ-BHC
3. δ-BHC
4. heptachlor
5. aldrin
6. β-BHC
7. θ-BHC
8. heptachlor epoxide
9. endosulfan I
10. γ-chlordane
11. α-chlordane
12. 4,4'-DDE
13. dieldrin
14. endrin
15. 4,4'-DDD
16. endosulfan II
17. 4,4'-DDT
18. endrin aldehyde
19. endosulfan sulfate
20. methoxychlor
21. endrin ketone
22. decachlorobiphenyl



Ellutia Capillary Columns



EL-5

Internal Diam(mm)	Length (m)	Film (Thickness µm)	Temp Limits (°C)	Part no.	Internal Diam(mm)	Length (m)	Film (Thickness µm)	Temp Limits (°C)	Part no.
0.10	10	0.10	-60 to 325/350	51100145	0.25	50	0.10	-60 to 325/350	51100146
	10	0.17	-60 to 325/350	51100221		50	0.12	-60 to 325/350	51100194
	10	0.33	-60 to 325/350	51100236		50	0.25	-60 to 325/350	51100159
	10	0.40	-60 to 320/350	51100169		50	0.50	-60 to 325/350	51100186
	20	0.10	-60 to 325/350	51100152		50	1.00	-60 to 320/350	51100206
	20	0.40	-60 to 320/350	51100172		60	0.10	-60 to 325/350	51100149
0.18	10	0.18	-60 to 325/350	51100196	60	0.25	-60 to 325/350	51100161	
	10	0.40	-60 to 325/350	51100170	60	0.50	-60 to 325/350	51100190	
	20	0.18	-60 to 325/350	51100197	60	1.00	-60 to 320/350	51100209	
	20	0.40	-60 to 325/350	51100173	0.32	15	0.10	-60 to 325/350	51100137
	40	0.18	-60 to 325/350	51100198		15	0.25	-60 to 325/350	51100154
	0.20	12	0.33	-60 to 325/350		51100238	15	0.50	-60 to 325/350
15		0.15	-60 to 325/350	51100211		15	1.00	-60 to 325/350	51100200
15		0.35	-60 to 325/350	51100163		15	3.00	-60 to 280/350	51100225
15		0.50	-60 to 325/350	51100177		25	0.10	-60 to 325/350	51100140
25		0.15	-60 to 325/350	51100212	25	0.25	-60 to 325/350	51100156	
25		0.33	-60 to 325/350	51100235	25	0.50	-60 to 325/350	51100179	
25		0.35	-60 to 325/350	51100164	25	1.00	-60 to 325/350	51100202	
25		0.50	-60 to 325/350	51100181	25	3.00	-60 to 280/350	51100227	
30		0.15	-60 to 325/350	51100213	30	0.10	-60 to 325/350	51100143	
30		0.35	-60 to 325/350	51100165	30	0.25	-60 to 325/350	51100158	
30		0.50	-60 to 325/350	51100185	30	0.50	-60 to 325/350	51100183	
50		0.15	-60 to 325/350	51100214	30	1.00	-60 to 325/350	51100205	
50	0.33	-60 to 325/350	51100237	30	3.00	-60 to 280/350	51100229		
50	0.35	-60 to 325/350	51100166	50	0.10	-60 to 325/350	51100147		
50	0.35	-60 to 325/350	51100167	50	0.25	-60 to 325/350	51100160		
50	0.50	-60 to 325/350	51100189	50	0.50	-60 to 325/350	51100187		
60	0.15	-60 to 325/350	51100215	50	1.00	-60 to 325/350	51100207		
60	0.35	-60 to 325/350	51100168	50	3.00	-60 to 280/350	51100231		
60	0.40	-60 to 325/350	51100171	60	0.10	-60 to 325/350	51100150		
60	0.50	-60 to 325/350	51100193	60	0.25	-60 to 325/350	51100162		
0.22	60	0.20	-60 to 325/350	51100222	60	0.50	-60 to 325/350	51100191	
0.25	15	0.10	-60 to 325/350	51100136	60	1.00	-60 to 325/350	51100210	
	15	0.25	-60 to 325/350	51100153	60	3.00	-60 to 280/350	51100233	
	15	0.50	-60 to 325/350	51100174	0.53	10	2.65	-60 to 270/290	51100224
	15	1.00	-60 to 320/350	51100199		15	0.10	-60 to 320/340	51100138
	25	0.10	-60 to 325/350	51100139		15	0.50	-60 to 320/340	51100176
	25	0.25	-60 to 325/350	51100155		15	1.50	-60 to 310/330	51100216
	25	0.50	-60 to 325/350	51100178		15	3.00	-60 to 270/290	51100226
	25	1.00	-60 to 320/350	51100201		15	5.00	-60 to 270/290	51100239
	30	0.10	-60 to 325/350	51100142	25	0.10	-60 to 320/340	51100141	
	30	0.25	-60 to 325/350	51100157	25	0.50	-60 to 320/340	51100180	
	30	0.50	-60 to 325/350	51100182	25	1.50	-60 to 310/330	51100217	
	30	1.00	-60 to 320/350	51100204	25	3.00	-60 to 270/290	51100228	

Slightly Polar

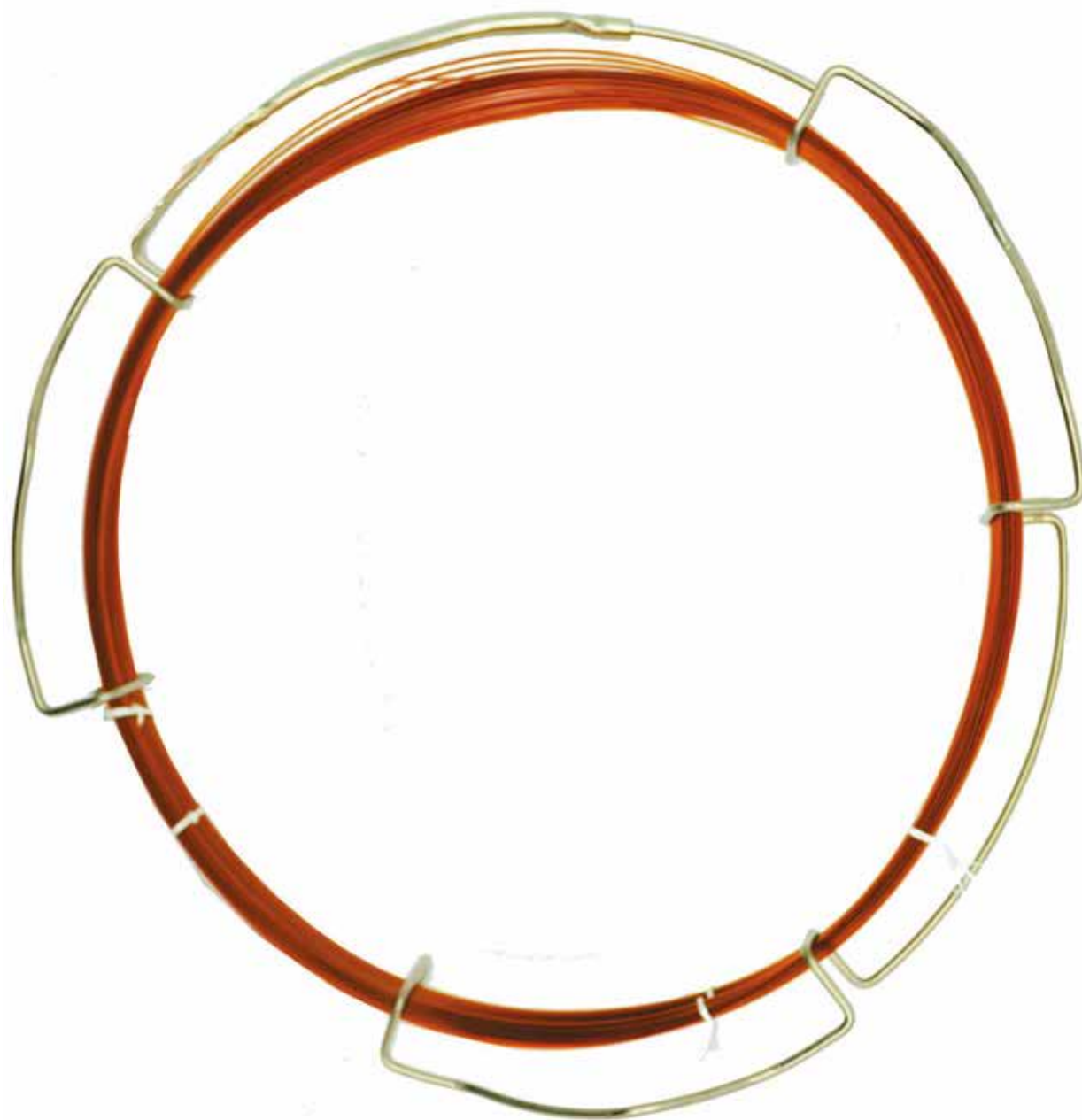


Ellutia Capillary Columns

EL-5

Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits ($^{\circ}\text{C}$)	Part no.	Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits ($^{\circ}\text{C}$)	Part no.
0.53	25	5.00	-60 to 270/290	51100240	0.53	50	0.50	-60 to 320/340	51100188
	25	1.0	-60 to 320/340	51100203		50	1.50	-60 to 310/330	51100219
	30	0.10	-60 to 320/340	51100144		50	3.00	-60 to 270/290	51100232
	30	0.50	-60 to 320/340	51100184		50	5.00	-60 to 270/290	51100242
	30	0.88	-60 to 310/330	51100195		50	1.0	-60 to 320/340	51100208
	30	1.50	-60 to 310/330	51100218		60	0.10	-60 to 320/340	51100151
	30	2.65	-60 to 270/290	51100223		60	0.50	-60 to 320/340	51100192
	30	3.00	-60 to 270/290	51100230		60	1.50	-60 to 310/330	51100220
	30	5.00	-60 to 270/290	51100241		60	3.00	-60 to 270/290	51100234
	50	0.10	-60 to 320/340	51100148		60	5.00	-60 to 270/290	51100243

Slightly Poalr





EL-5ht

(95%) Dimethyl-(5%) diphenylpolysiloxane, bonded and cross-linked phase.

- Produced specially for analysis at high temperature up to 400°C
- Fused silica tube covered with polyimide, resistant to high temperatures, or stainless steel tube (specially deactivated)
- Excellent symmetry for compounds with high boiling points
- Preferably used for the analysis of waxes, triglycerides, sterol esters, polyoxyethylenated alcohols, etc.

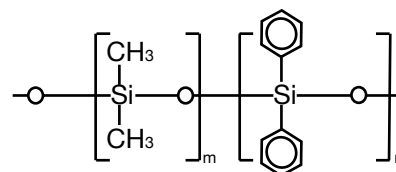
Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits (°C)	Part no.
0.25	15	0.10	-60 to 400	51100712
	30	0.10	-60 to 400	51100714
0.32	15	0.10	-60 to 400	51100713
	30	0.10	-60 to 400	51100715

EL-5ht Equivalent Phase

Agilent: DB-5t

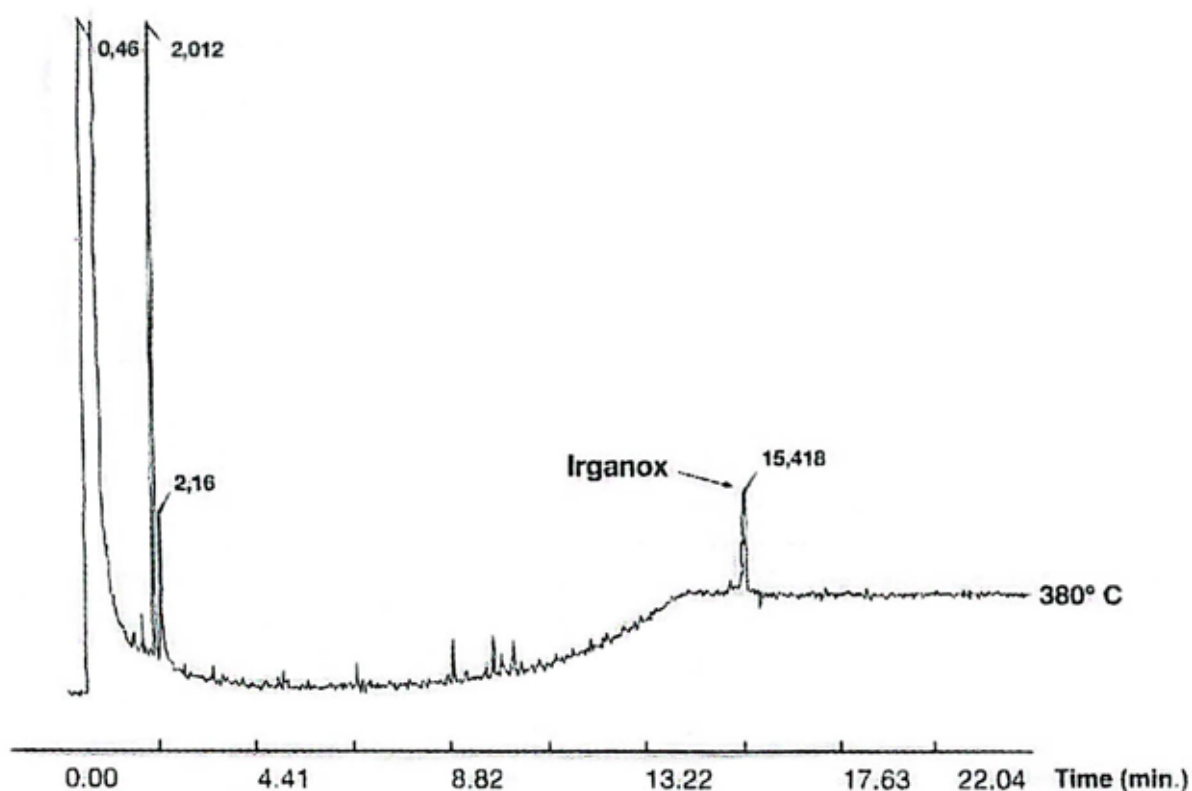
Phenomenex: ZB-5ht

Structure of (95%) Dimethyl-(5%) diphenylpolysiloxane



IRGANOX 1010

Column: **EL-5ht**, 15m x 0.25mm x 0,10μm
 Injection: 1μl (Irganox 1010, 12mg/ml chloroform), split (1:60), 370°C
 Carrier Gas: H₂, 6psi (41.3 kPa)
 Oven Temperature: 150°C to 380°C (10min) @ 30°C/min
 Detector: FID, 390°C





Ellutia Capillary Columns

EL-STEROL

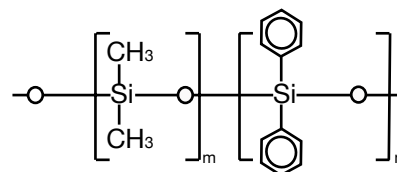
(95%) Dimethyl-(5%) diphenylpolysiloxane, bonded and cross-linked phase.

- Column specifically designed for the analysis of complex mixtures of sterols, from either animal or plant origin
- Deactivation method of the capillary tube wall that guarantees a high chemical inertness a low bleeding level and allows the analysis of sterols without derivatisation
- The column is specifically tested for sterols

EL-STEROL Equivalent Phase

Supelco: SAC-5

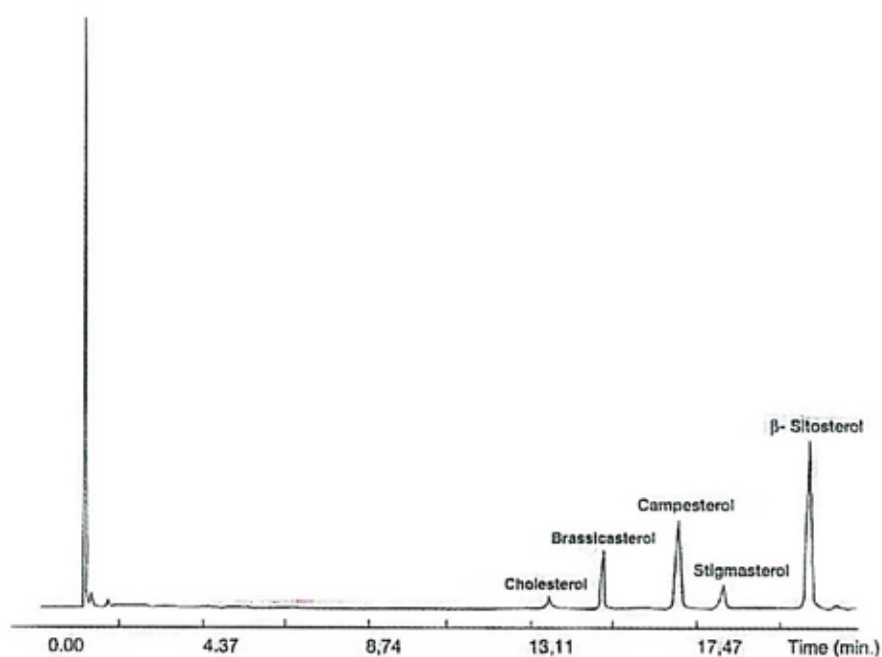
Structure of (95%) Dimethyl-(5%) diphenylpolysiloxane



Internal Diam(mm)	Length (m)	Film (Thickness μ m)	Temp Limits (°C)	Part no.
0.22	30	0.22	-60 to 325/350	51100670

Sterols

Column: **EL-STEROL**, 30m x 0.22 μ m x 0.22 μ m
Oven Temperature: 265°C
Injector: 280°C
Carrier gas: H₂, 18psi (124 kPa)
Injection: 0.5 μ l sterols standard, (25mg/ml) split (1:100)
Detector: FID, 300°C





EL-5MS

(95%)Dimethyl-(5%) diphenylpolysiloxane, bonded and cross-linked phase.

- The EL-5MS column uses the same stationary phase as EL-5, but the polymer synthesis process, the capillary deactivation technique and the bonding and crosslinking procedures have been optimised to obtain the minimum possible bleeding level and an exceptional chemical inertness
- The bleeding specifications for a column of 30m x 0.25mm x 0.25µm indicate that it is lower than 4 pA at 325°C
- Column recommended to work with any selective detector
- Ideal column to connect with a mass detector. Its ultra low bleeding joined to its high chemical inertness allows for a better signal/noise ratio (high sensitivity level), and therefore better detection and quantification of sample components at low concentration

EL-5MS Equivalent Phase

Restek: Rtx 5ms, Rxi-5ms

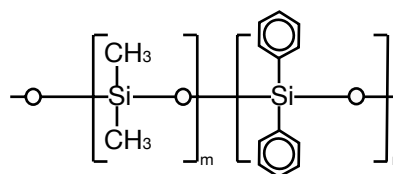
Agilent/JW: HP-5MS

Supelco: PTE-5, Equity-5

Macherey-Nagel: OPTIMA-5ms

Varian: CP-Sil8-MS

Structure of (95%) Dimethyl-(5%) diphenylpolysiloxane



Internal Diam(mm)	Length (m)	Film (Thickness µm)	Temp Limits (°C)	Part no.	Internal Diam(mm)	Length (m)	Film (Thickness µm)	Temp Limits (°C)	Part no.
0.10	10	0.10	-60 to 325/350	51100629	0.25	60	0.25	-60 to 325/350	51100637
	10	0.40	-60 to 325/350	51100639		60	1.00	-60 to 325/350	51100657
	20	0.10	-60 to 325/350	51100632		0.32	15	0.10	-60 to 325/350
20	0.40	-60 to 325/350	51100640	15	0.25		-60 to 325/350	51100634	
15	0.50	-60 to 325/350	51100641	15	1.00		-60 to 325/350	51100652	
0.18	20	0.18	-60 to 325/350	51100649	0.30	25	0.50	-60 to 325/350	51100643
	40	0.18	-60 to 325/350	51100650		30	0.10	-60 to 325/350	51100628
0.30	12	0.33	-60 to 325/350	51100667	0.53	15	1.00	-60 to 325/350	51100658
	15	0.33	-60 to 325/350	51100662		15	1.00	-60 to 320/340	51100642
	25	0.11	-60 to 325/350	51100626		15	1.50	-60 to 325/350	51100660
	25	0.33	-60 to 325/350	51100663		30	0.50	-60 to 310/330	51100646
	30	0.33	-60 to 325/350	51100664		30	1.00	-60 to 320/340	51100656
	50	0.33	-60 to 325/350	51100665		30	1.00	-60 to 320/340	51100656
0.25	60	0.33	-60 to 325/350	51100666	0.53	30	1.40	-60 to 325/350	51100659
	15	0.10	-60 to 325/350	51100624		30	1.50	-60 to 310/330	51100661
	15	0.25	-60 to 325/350	51100633					
	15	1.00	-60 to 325/350	51100651					
	30	0.50	-60 to 325/350	51100644					
	30	0.10	-60 to 325/350	51100627					



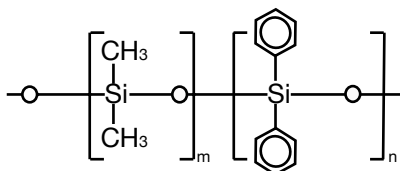
Ellutia Capillary Columns

EL-5AMINE

95% Dimethyl-(5%) diphenylpolysiloxane, bonded and cross-linked phase.

- Column specially designed for the analysis of amines
- Basic deactivation of the column surface with reagents synthesized in our laboratories, that jointly with the crosslinking method have permitted the minimization of the absorption level and tailing of basic compounds, like the alkylamines, alcoholamines, basic pharmaceuticals, aromatic amines, etc.
- Selectivity and thermal stability equivalent to EL-5 columns.

Structure of (95%) Dimethyl-(5%) diphenylpolysiloxane



EL-5AMINE Equivalent Phase

Restek: Rtx-5Amine

Supelco: PTA-5

Macherey-Nagel: OPTIMA-5A

Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits ($^{\circ}\text{C}$)	Part no.	
0.25	15	0.50	-60 to 300/315	51100391	
	15	1.00	-60 to 300/315	51100397	
	30	0.50	-60 to 300/315	51100393	
	30	1.00	-60 to 300/315	51100400	
	60	0.50	-60 to 300/315	51100395	
	60	1.00	-60 to 300/315	51100403	
0.32	15	0.50	-60 to 300/315	51100392	
	15	1.00	-60 to 300/315	51100398	
	15	1.50	-60 to 290/305	51100406	
	30	0.50	-60 to 300/315	51100394	
	30	1.00	-60 to 300/315	51100401	
	30	1.50	-60 to 290/305	51100407	
	60	0.50	-60 to 300/315	51100396	
	60	1.00	-60 to 300/315	51100404	
	60	1.50	-60 to 290/305	51100408	
	0.53	15	1.00	-60 to 290/305	51100399
		15	3.00	-60 to 280/295	51100409
		30	1.00	-60 to 290/305	51100402
30		3.00	-60 to 280/295	51100410	
60		1.00	-60 to 290/305	51100405	
60		3.00	-60 to 280/295	51100411	

Amines test

Column: **EL-5AMINE**

Dimensions: 30m x 0.25mm x 0.50 μm

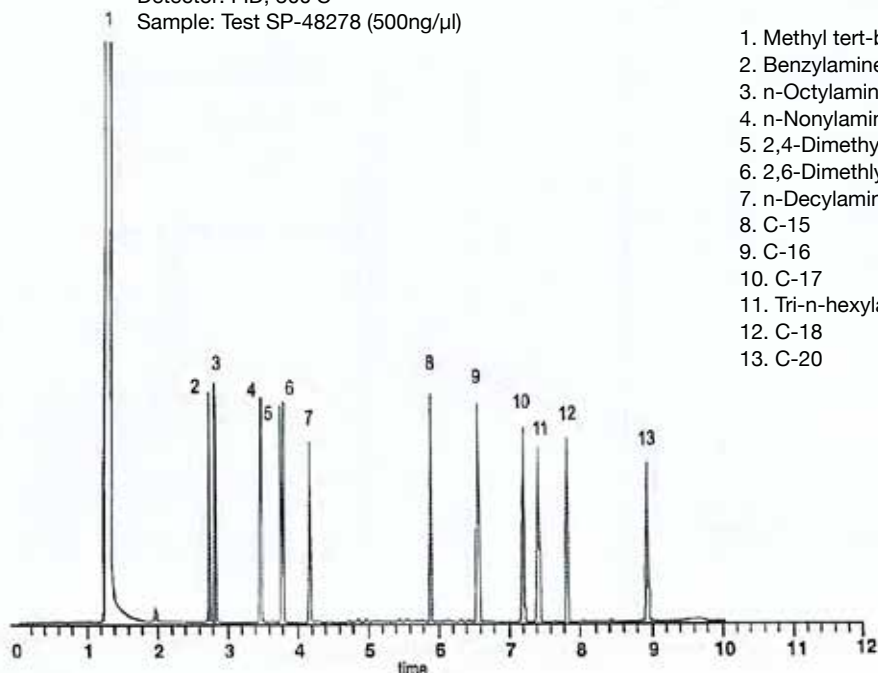
Injection: 1 μl (split 1:50), 280 $^{\circ}\text{C}$

Carrier gas: H₂, 12 psi (87.7kPa)

Oven Temperature: 100 $^{\circ}\text{C}$ to 280 $^{\circ}\text{C}$ (5min) @ 20 $^{\circ}\text{C}/\text{min}$

Detector: FID, 300 $^{\circ}\text{C}$

Sample: Test SP-48278 (500ng/ μl)



Peak Name

1. Methyl tert-butyl ether
2. Benzylamine
3. n-Octylamine
4. n-Nonylamine
5. 2,4-Dimethylaniline
6. 2,6-Dimethylaniline
7. n-Decylamine
8. C-15
9. C-16
10. C-17
11. Tri-n-hexylamine
12. C-18
13. C-20



EL-5.625

95% Dimethyl-(5%) diphenylpolysiloxane, bonded and cross-linked phase.

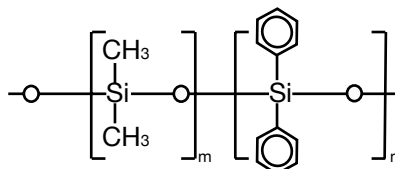
- Specially manufactured column to fulfil the levels of inertness required by the EPA methods 625, 1625, 8270 and CLP protocols
- Inertness and minimum absorption for acidic, basic and neutral compounds

EL-5.625 Equivalent Phase

Supelco: PTE-5

Agilent: DB.5.625

Structure of (95%) Dimethyl-(5%) diphenylpolysiloxane



Internal Diam(mm)	Length (m)	Film Thickness (µm)	Temp Limits (°C)	Part no.	Internal Diam(mm)	Length (m)	Film Thickness (µm)	Temp Limits (°C)	Part no.
0.18	20	0.36	-60 to 325/350	51100470	0.25	60	0.25	-60 to 325/350	51100453
0.20	12	0.33	-60 to 325/350	51100469	0.32	15	0.10	-60 to 325/350	51100444
	25	0.33	-60 to 325/350	51100466		15	0.25	-60 to 325/350	51100450
	50	0.33	-60 to 325/350	51100467		15	0.50	-60 to 325/350	51100456
	50	0.33	-60 to 325/350	51100468		15	1.00	-60 to 325/350	51100461
0.25	15	0.10	-60 to 325/350	51100443		30	0.10	-60 to 325/350	51100446
	15	0.25	-60 to 325/350	51100449		30	0.25	-60 to 325/350	51100452
	15	0.50	-60 to 325/350	51100455		30	0.50	-60 to 325/350	51100458
	15	1.00	-60 to 325/350	51100460		30	1.00	-60 to 325/350	51100463
	30	0.10	-60 to 325/350	51100445		60	0.10	-60 to 325/350	51100448
	30	0.25	-60 to 325/350	51100451	0.53	15	1.50	-60 to 325/350	51100465
	30	0.50	-60 to 325/350	51100457		30	0.50	-60 to 325/350	51100459
	30	1.00	-60 to 325/350	51100462		30	1.00	-60 to 325/350	51100464
	60	0.10	-60 to 325/350	51100447		60	0.25	-60 to 325/350	51100454



ELR-CRESOL

Proprietary nonbonded phase

- Stationary phase of perfectly defined purity
- Column specially designed for analysis of phenolic compounds (phenols, cresylic acids)
- Derivatization of phenolic compounds is not required to obtain suitable resolution
- Resolves m-cresol/p-cresol and 2,4-xylene/2,5 pairs, which are not separated with other columns used for this analysis such as EL-5 and ELM-WAX

ELR-CRESOL Equivalent Phase

Varian: CP-CRESOL

Internal Diam(mm)	Length (m)	Film Thickness (µm)	Temp Limits (°C)	Part no.
0.25	30	0.20	130	51100735
	60	0.20	130	51100736



Ellutia Capillary Columns

EL-G27

95% Dimethyl-(5%) diphenylpolysiloxane, bonded and cross-linked phase.

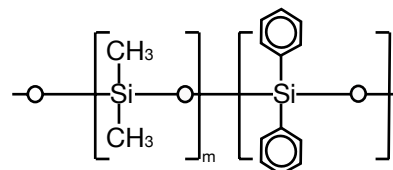
- Column which fulfils the specification of the American Pharmacopeia (USP), for test of organic volatile impurities (OVI) in pharmaceutical products.

EL-G27 Equivalent Phase

Supelco: G27

Restek: Rtx-G27

Structure of (95%) Dimethyl-(5%) diphenylpolysiloxane



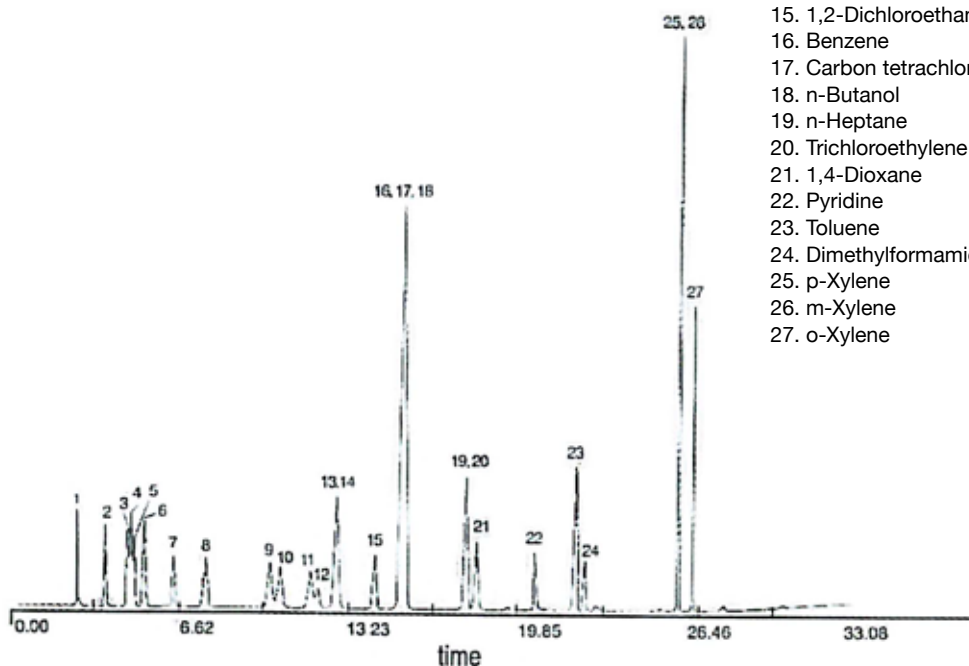
Internal Diam(mm)	Length (m)	Film Thickness (µm)	Temp Limits (°C)	Part no.
0.53	30	5.0	-60 to 270/290	51100357

EL-G27

Column: **EL-G27**, 30m x 0.53mm x 5.0µm
 Injection: 220°C, (split 1:80), 5m Phenylmethyl deactivated retention gap
 Carrier gas: He, 4,5 psi (31kPa), 35cm/s to 35°C
 Oven temperature: 35°C (10min) to 100°C @ 5°C/min to 240°C (5min) @ 25°C/min
 Detector: FID, 250°C
 Sample: 0.02µl solvent mixture

Peak Name

1. Methanol
2. Ethanol
3. Acetonitrile
4. Acetone
5. Isopropanol
6. Ethyl ether
7. Methylene chloride
8. n-Propanol
9. Methyl ethyl ketone (MEK)
10. n-Hexane
11. Ethyl acetate
12. Chloroform
13. Tetrahydrofuran (THF)
14. Cyclohexane
15. 1,2-Dichloroethane
16. Benzene
17. Carbon tetrachloride
18. n-Butanol
19. n-Heptane
20. Trichloroethylene
21. 1,4-Dioxane
22. Pyridine
23. Toluene
24. Dimethylformamide (DMF)
25. p-Xylene
26. m-Xylene
27. o-Xylene





ELM.X5

Silphenylene phase, selectivity similar to EL-5, bonded and cross-linked phase.

- Choice column for the analysis of semivolatle compounds with GC-MS
- Polymer synthesis designed and developed by scientists at teknokroma
- Selectivity similar to EL-5
- New generation of column incorporated arylene groups in the polymer structure, and this improves the thermal stability, reduces the bleeding level and provides optimal resolution for aromatic compounds.
- Manufacturing procedures of this teknokroma column guarantees maximal inertness and minimal bleeding level
- Quality control test (MX5) that guarantees total inertness and optimal signal/noise ratio (S/N) for the more active compounds that normally suffer adsorption problems, like 2,4-dinitrophenol, 4 nitroaniline and pentachlorophenol

ELM.X5 Equivalent Phase

Restek: Rxi-5Sil MS

Aglient/JW: DB.5 MS, HP-5TA

Supelco: MDN-5, SLB-5MS

Chromopack/ Varian: CP-SIL8CB MS, VF-5MS

Alltech: AT-Tms

Quadrex: 007-5MS

Trajan: BPX-5

Phenomenx: ZB-5MS

Signal/Noise ratio

The reduction of bleeding level to the minimum possible value allows the detection of trace compounds at high temperature when interferences in the identification process are minimised.

Column: **ELM.X5**

Dimensions: 30m x 0.25mm x 0.25µm

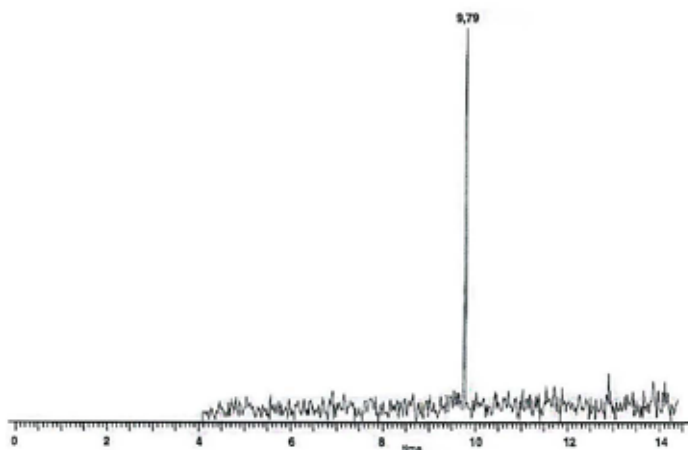
Injection: 1.0µl (splitless, 1min) 300°C

Carrier gas: He, 12 ml/min. constant flow

Oven Temperature: 60°C (1min) to 320°C (15min) @ 30°C/min

Detector: MSD(SIM), transfer line 300°C

Sample: DCB/n-Hexane



Internal Diam(mm)	Length (m)	Film (Thickness µm)	Temp Limits (°C)	Part no.
0.10	10	0.40	-60 to 325/350	51100806
0.15	25	0.15	-60 to 325/350	51100821
0.18	20	0.18	-60 to 325/350	51100813
	40	0.18	-60 to 325/350	51100814
0.20	12	0.33	-60 to 325/350	51100826
	25	0.33	-60 to 325/350	51100824
	50	0.33	-60 to 325/350	51100825
0.25	15	0.10	-60 to 325/350	51100793
	15	0.25	-60 to 325/350	51100799
	15	0.50	-60 to 325/350	51100807
	15	1.00	-60 to 325/350	51100815
	30	0.10	-60 to 325/350	51100795
	30	0.25	-60 to 325/350	51100801
	30	0.50	-60 to 325/350	51100810
	30	1.00	-60 to 325/350	51100818
	40	0.17	-60 to 325/350	51100792
	60	0.10	-60 to 325/350	51100797
	60	0.25	-60 to 325/350	51100803
0.32	15	0.10	-60 to 325/350	51100794
	15	0.25	-60 to 325/350	51100800
	15	0.50	-60 to 325/350	51100808
	15	1.00	-60 to 325/350	51100816
	25	0.40	-60 to 325/350	51100805
	30	0.10	-60 to 325/350	51100796
	30	0.25	-60 to 325/350	51100802
	30	0.50	-60 to 325/350	51100811
	30	1.00	-60 to 325/350	51100819
	60	0.10	-60 to 325/350	51100798
	60	0.25	-60 to 325/350	51100804
0.53	15	0.50	-60 to 320/340	51100809
	15	1.00	-60 to 320/340	51100817
	15	1.50	-60 to 320/340	51100822
	30	0.50	-60 to 320/340	51100812
	30	1.00	-60 to 320/340	51100820
	30	1.50	-60 to 310/330	51100823



Ellutia Capillary Columns

Slightly Polar



ELS-5MS

(95%) Dimethyl (5%) diphenylpolysiloxane, bonded and cross-linked phase.

- Selectivity identical to EL-5 but with excellent chemical inertness making it ideal for trace analysis and GC-MS
- Specifically tested for chemical inertness towards active compounds with excellent thermal stability
- Minimum peak tailing for active analytes with minimal compound loss and degradation
- Improved mass spectral integrity and greater precision for quantitative analysis at trace levels
- With ultra-low column bleed and high chemical inertness it provides a better signal/noise ratio to enable higher sensitivity analysis and improved quantification at low concentrations

Sapiens-5MS Equivalent Phase

Agilent: DB-5ms Ultra Inert, HP-5ms Ultra Inert

Agilent: Rti-5ms, Rxi-5ms

Phenomenex: ZB-5MSi

Sigma-Aldrich: Equity®-5

SGE: BP-5

Macherey-Nagel: Optima-5MS

Internal Diam(mm)	Length (m)	Film (Thickness µm)	Temp Limits (°C)	Part no.
0.10	10	0.10	-60 to 325/350	51100924
0.18	20	0.18	-60 to 325/350	51100925
	20	0.18	-60 to 325/350	51100926
0.25	15	0.25	-60 to 325/350	51100927
	15	1.00	-60 to 325/350	51100928
	25	0.25	-60 to 325/350	51100929
	30	0.25	-60 to 325/350	51100930
	30	0.50	-60 to 325/350	51100931
	30	1.00	-60 to 325/350	51100932
	50	1.00	-60 to 325/350	51100933
	60	0.25	-60 to 325/350	51100934
0.32	15	0.25	-60 to 325/350	51100935
	30	0.25	-60 to 325/350	51100936
	30	0.50	-60 to 325/350	51100937
	30	1.00	-60 to 325/350	51100938
	60	1.00	-60 to 325/350	51100939

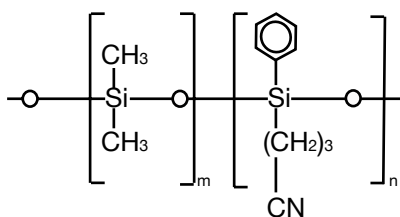


ELM.XLB (Proprietary phase)

Silphenylene phase, bonded and cross-linked.

- Low polarity phase with Extreme Low Bleed
- Directly replace for DB-XLB
- General purpose column with extended temperature range (30 to 340/360°C)
- Ideal column for GC-MS analysis
- Unique selectivity for aromatic compounds (PCBs, PAHs, PBDEs)
- Excellent column for pesticides and herbicides

Structure of Poly(dimethylcyanopropylphenyl)siloxane



ELM.XLB Equivalent Phase

Restek: Rxi-XLB

Agilent/JW: DB-XLB

Supelco: MDN 12

Varian: VF-Xms

Phenomenex: ZB-XLB

Macherey-Nagel: OPTIMA XLB

Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits (°C)	Part no.	
0.10	10	0.10	30 to 340/360	51100512	
	20	0.18	30 to 340/360	51100523	
		30	0.18	30 to 340/360	51100521
0.18	60	0.18	30 to 340/360	51100522	
	0.25	15	0.10	30 to 340/360	51100509
		15	0.25	30 to 340/360	51100513
0.25	15	1.00	30 to 340/360	51100524	
	30	0.10	30 to 340/360	51100510	
	30	0.25	30 to 340/360	51100515	
0.32	30	0.50	30 to 340/360	51100519	
	30	1.00	30 to 340/360	51100526	
	60	0.25	30 to 340/360	51100517	
0.53	15	0.25	30 to 340/360	51100514	
	15	1.00	30 to 340/360	51100525	
	30	0.10	30 to 340/360	51100511	
0.53	30	0.25	30 to 340/360	51100516	
	30	0.50	30 to 340/360	51100520	
	30	1.00	30 to 340/360	51100527	
0.53	60	0.25	30 to 340/360	51100518	
	0.53	15	1.5	30 to 320/340	51100528
		30	1.5	30 to 320/340	51100529

Slightly Polar

PCB's

Column: **ELM.XLB**

Dimensions: 30m x 0.25mm x 0.25μm

Injection: 1μl PCB's St. in Hexane (200ppb each compound, 100ppb 2,4,5,6-Tetrachloro-

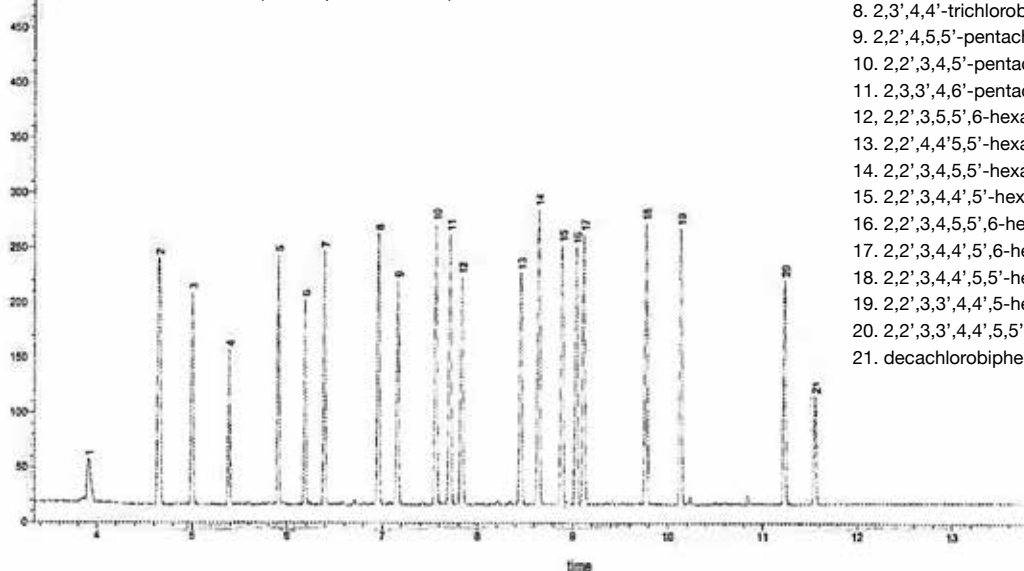
m-xylene, 100ppb Decachlorobiphenyl, splitless(0.75min), 250°C

Carrier gas: H₂, constant pressure 20psi (137.8 kPa)

Linear Velocity: 70cm/seg @ 120°C

Oven Temperature: 120°C (0.5min) @ 25°C/min to 260°C(2min) @25°C/min to 325°C(5min)

Detector: ECD, 330°C (make up N₂ to ml/min)



Peak Name

1. 2-chlorobiphenyl (PCB 1)
2. 2,4,5,6-tetrachloro-m-xylene (SS)
3. 2,3-dichlorobiphenyl (PCB5)
4. 2,2',5-trichlorobiphenyl (PCB18)
5. 2,4',5-trichlorobiphenyl (PCB31)
6. 2,2',5,5'-trichlorobiphenyl (PCB52)
7. 2,2',3,5'-trichlorobiphenyl (PCB44)
8. 2,3',4,4'-trichlorobiphenyl (PCB66)
9. 2,2',4,5,5'-pentachlorobiphenyl (PCB101)
10. 2,2',3,4,5'-pentachlorobiphenyl (PCB87)
11. 2,3,3',4,6'-pentachlorobiphenyl (PCB110)
12. 2,2',3,5,5',6-hexachlorobiphenyl (PCB151)
13. 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153)
14. 2,2',3,4,5,5'-hexachlorobiphenyl (PCB141)
15. 2,2',3,4,4',5'-hexachlorobiphenyl (PCB136)
16. 2,2',3,4,5,5',6-heptachlorobiphenyl (PCB187)
17. 2,2',3,4,4',5',6-hexachlorobiphenyl (PCB183)
18. 2,2',3,4,4',5,5'-hexachlorobiphenyl (PCB180)
19. 2,2',3,3',4,4',5-hexachlorobiphenyl (PCB170)
20. 2,2',3,3',4,4',5,5',6-hexachlorobiphenyl (PCB26)
21. decachlorobiphenyl (SS)



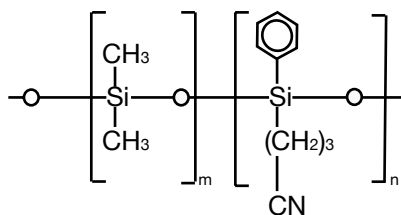
Ellutia Capillary Columns

EL-1301

94% Dimethyl-(6%) cyanopropylphenyl polysiloxane, bonded and cross-linked phase.

- (6%)Cyanopropyl-phenyl-(94%)dimethylpolysiloxane
- Ideal column for analysing mixtures of acidic and basic compounds with a wide range of polarity
- This column of intermediate polarity is very useful for analysing pesticides and herbicides

Structure of 94% Dimethyl-(6%) cyanopropylphenyl polysiloxane



Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits ($^{\circ}\text{C}$)	Part no.
0.25	15	0.25	-20 to 280/300	51100719
	15	1.00	-20 to 260/280	51100726
	30	0.25	-20 to 280/300	51100722
	30	1.00	-20 to 260/280	51100729
	60	0.25	-20 to 280/300	51100724
	60	1.00	-20 to 260/280	51100732
0.32	15	0.25	-20 to 280/300	51100721
	15	1.00	-20 to 260/280	51100727
	30	0.25	-20 to 280/300	51100723
	30	1.00	-20 to 260/280	51100730
	60	0.25	-20 to 280/300	51100725
	60	1.00	-20 to 260/280	51100733
0.53	15	1.00	-20 to 260/280	51100728
	30	1.00	-20 to 260/280	51100731
	60	1.00	-20 to 260/280	51100734

EL-1301 Equivalent Phase

Agilent: HP-130, HP-264, DB-1301, DB-624

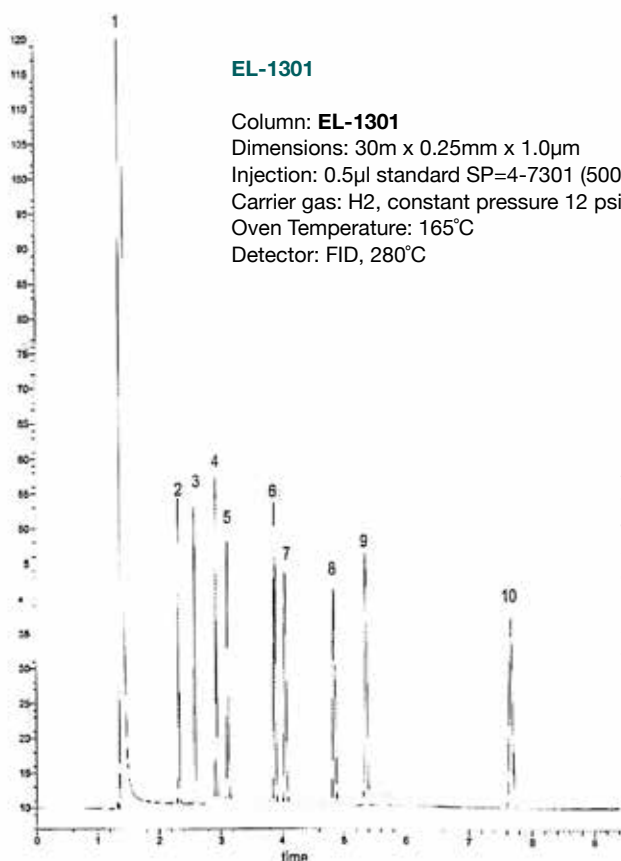
Supelco: SPB-1301, OVI-G43

Restek: Rtx-1301, Rtx-624

Trajan: BPX-624

Alltech: AT-624

Medium Polarity



EL-1301

Column: **EL-1301**

Dimensions: 30m x 0.25mm x 1.0 μm

Injection: 0.5 μl standard SP=4-7301 (500ng/ml) split 1:50, 260 $^{\circ}\text{C}$

Carrier gas: H₂, constant pressure 12 psi (82.7kPa)

Oven Temperature: 165 $^{\circ}\text{C}$

Detector: FID, 280 $^{\circ}\text{C}$

Peak Name

1. Methylene chloride
2. C-10
3. 2-Octanone
4. C-11
5. 1-Octanol
6. C-12
7. 2,6-Dimethylphenol
8. 2,6-Dimethylaniline
9. C-13
10. C-14



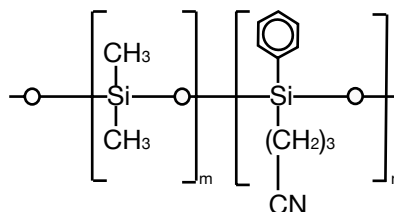
EL-624

94% Dimethyl-(6%) cyanopropylphenyl polysiloxane, bonded and cross-linked phase.

- (6%) Cyanopropyl-phenyl-(94%) dimethylpolysiloxane
- Column developed specially for environmental analysis of volatile compounds ("Volatile Priority Pollutants")
- Column perfectly compatible with EPA methods 501.3, 502.2, 524.2, 601, 602, 8010, 8015, 8020, 8221, 8240 and 8260
- Excellent inertness against active compounds

Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits ($^{\circ}\text{C}$)	Part no.
0.18	20	1.00	-20 to 240/260	51100696
0.20	25	1.12	-20 to 240/260	51100697
0.25	30	1.40	-20 to 240/260	51100698
	60	1.40	-20 to 240/260	51100699
0.32	15	1.80	-20 to 240/260	51100700
	30	1.80	-20 to 240/260	51100701
	60	1.80	-20 to 240/260	51100702
0.53	25	3.00	-20 to 240/260	51100703
	30	3.00	-20 to 240/260	51100704
	60	3.00	-20 to 240/260	51100705
	75	3.00	-20 to 240/260	51100706
	105	3.00	-20 to 240/260	51100707
	30	0.25	-20 to 240/260	51100432

Structure of 94% Dimethyl-(6%) cyanopropylphenyl polysiloxane



EL-624 Equivalent Phase

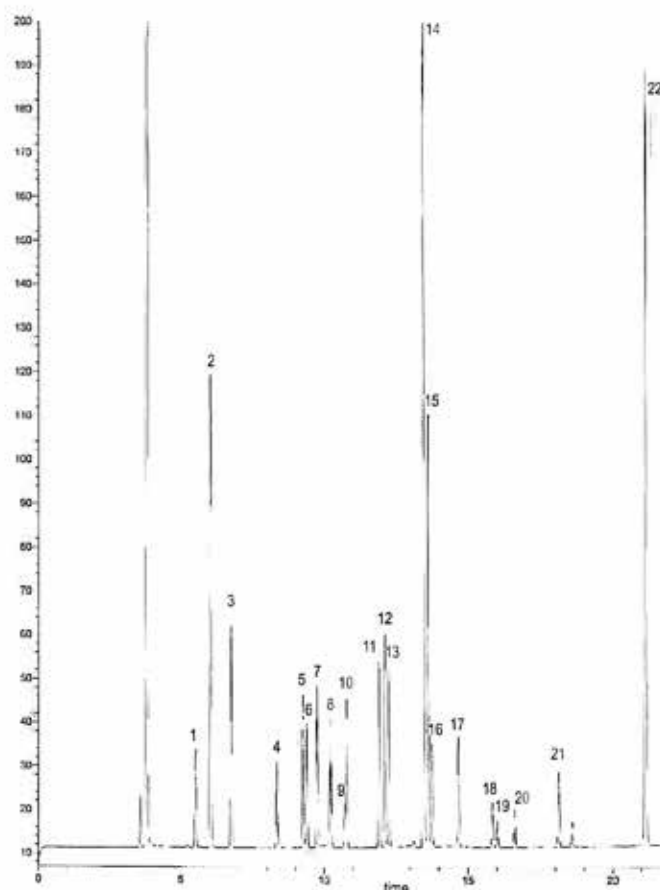
Agilent: HP-1301, HP-624, DB-1301, DB-624

Supelco: SPB-1301, OVI-G43

Restek: Rtx-1301, Rtx-624

Trajan: BPX-624

Alltech: AT-624



EL-624

Column: **EL-624**

Dimensions: 60m x 0.25mm x 1.4 μm

Injection: 1 μl solvents mixture, split 1:100 (20-600ng/comp), 260 $^{\circ}\text{C}$

Carrier gas: h2, constant pressure 25psi (172.3kPa)

Oven Temperature: 50 $^{\circ}\text{C}$ (5min) @ 6 $^{\circ}\text{C}/\text{min}$ to 220 $^{\circ}\text{C}$

Detector: FID, 280 $^{\circ}\text{C}$

Peak Name

- | | |
|-----------------------|-----------------------|
| 1. Diethylether | 11. 2-Pentanone |
| 2. Acetone | 12. 3-Pentanone |
| 3. Methyl acetate | 13. Propyl acetate |
| 4. Vinyl acetate | 14. Pyridine |
| 5. MEK | 15. Toluene |
| 6. Ethyl acetate | 16. Isobutyl acetate |
| 7. Tetrahydrofuran | 17. Butyl acetate |
| 8. Cyclohexane | 18. Ethyl Benzene |
| 9. Benzene | 19. m-Xylene/p-Xylene |
| 10. Isopropyl acetate | 20. o-Xylene |
| | 21. Diisobutylketone |
| | 22. Nitrobenzene |



Ellutia Capillary Columns

EL-G43

94% Dimethyl-(6%) cyanopropylphenyl polysiloxane, bonded and cross-linked phase.

- (6%) Cyanopropyl-phenyl-(94%) dimethylpolysiloxane (USP G43)
- Fulfils the specifications of the American (USP) and European (EP) pharmacopoeia for the analysis of residual solvents (OVI) in pharmaceutical products, USP method <467> and EP 2.4.24
- Column with chemical inertness and low bleed guaranteed
- Specially tested for complete separation of the five solvents regulated by USP Method 467
- For this analysis, pharmacopoeia recommends the use of a guard column of 5m to trap the non volatile impurities in the sample

EL-G43 Equivalent Phase

Agilent: HP-1301, HP-624, DB-13031, DB-624

Supelco: SPB-1301, OVI-G43

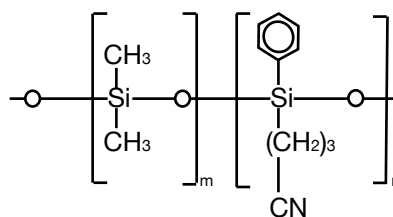
Restek: Rtx-1301, Rtx-624

Trajan: BPX-624

Alltech: AT-624

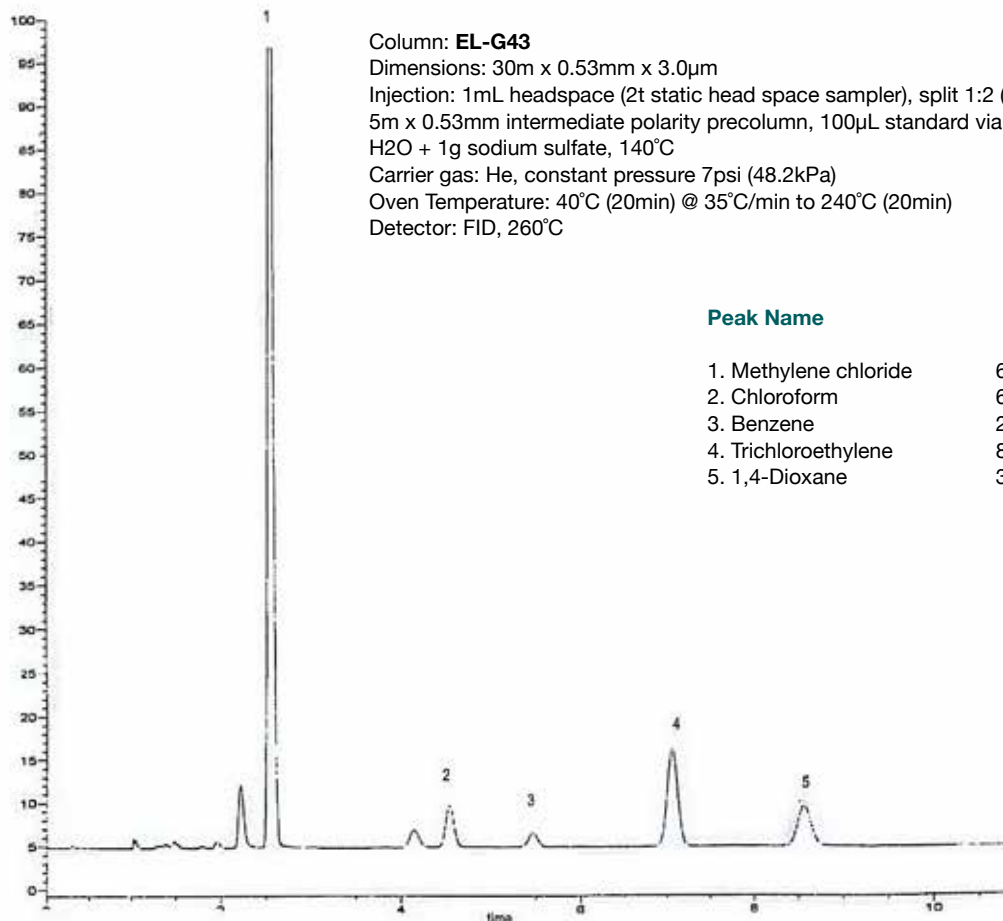
USP Nomenclature: G43

Structure of 94% Dimethyl-(6%) cyanopropylphenyl polysiloxane



Internal Diam(mm)	Length (m)	Film (Thickness μ m)	Temp Limits ($^{\circ}$ C)	Part no.
0.53	30	3.00	-20 to 240/260	51100356

Medium Polarity



EL-G43

Column: **EL-G43**

Dimensions: 30m x 0.53mm x 3.0 μ m

Injection: 1mL headspace (2t static head space sampler), split 1:2 (liner 1mm ID), 5m x 0.53mm intermediate polarity precolumn, 100 μ L standard vial 20 mL + 5mL H₂O + 1g sodium sulfate, 140 $^{\circ}$ C

Carrier gas: He, constant pressure 7psi (48.2kPa)

Oven Temperature: 40 $^{\circ}$ C (20min) @ 35 $^{\circ}$ C/min to 240 $^{\circ}$ C (20min)

Detector: FID, 260 $^{\circ}$ C

Peak Name

1. Methylene chloride	600ppm
2. Chloroform	60ppm
3. Benzene	2ppm
4. Trichloroethylene	80ppm
5. 1,4-Dioxane	380ppm

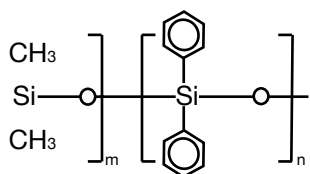


EL-14

(14%) Diphenyl-(86%) dimethylpolysiloxane, bonded and cross-linked phase.

- (14%) Diphenyl-(86%) dimethylpolysiloxane
- Column of intermediate polarity without cyanopropyl groups in its structure
- Chemical inertness and low bleed guaranteed
- Confirmation column alongside EL-1 and EL-5

Structure of (14%) Diphenyl-(86%) dimethylpolysiloxane



EL-14 Equivalent phase

Varian: CP-SIL 13 CB

Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits ($^{\circ}\text{C}$)	Part no.
0.25	15	0.20	-20 to 300/330	51100755
	15	0.40	-20 to 300/330	51100737
	15	1.20	-20 to 300/330	51100746
	30	0.20	-20 to 300/330	51100757
	30	0.40	-20 to 300/330	51100739
	30	1.20	-20 to 300/330	51100748
0.32	60	0.20	-20 to 300/330	51100759
	60	0.40	-20 to 300/330	51100741
	60	1.20	-20 to 300/330	51100750
	15	0.20	-20 to 300/330	51100756
	15	0.40	-20 to 300/330	51100738
	15	1.20	-20 to 300/330	51100747
0.53	30	0.20	-20 to 300/330	51100758
	30	0.40	-20 to 300/330	51100740
	30	1.20	-20 to 300/330	51100749
	60	0.20	-20 to 300/330	51100760
	60	0.40	-20 to 300/330	51100742
	60	1.20	-20 to 300/330	51100751
	15	1.00	-20 to 300/330	51100743
	15	2.00	-20 to 300/330	51100752
	30	1.00	-20 to 300/330	51100744
	30	2.00	-20 to 300/330	51100753
	60	1.00	-20 to 300/330	51100745
	60	2.00	-20 to 300/330	51100754

Medium Polarity





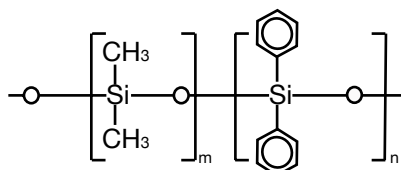
Ellutia Capillary Columns

EL-20

(20%) Diphenyl-(80%) Dimethylpolysiloxane, bonded and cross-linked phase.

- (20%) Diphenyl-(80%) dimethylpolysiloxane
- Column of intermediate polarity without cyanopropyl groups in its structure
- Excellent confirmation column

Structure of (20%) Diphenyl-(80%) dimethylpolysiloxane



EL-20 Equivalent Phase

Varian: SP-SIL 13 CB

Supelco: SPB-20

Alltech: AT-20

Quadrex: 007-502

Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits ($^{\circ}\text{C}$)	Part no.
0.25	15	0.25	-20 to 300/320	51100372
	15	1.00	-20 to 280/300	51100381
	30	0.25	-20 to 300/320	51100374
	30	1.00	-20 to 280/300	51100385
	60	0.25	-20 to 300/320	51100376
	60	1.00	-20 to 280/300	51100388
0.32	15	0.25	-20 to 300/320	51100373
	15	1.00	-20 to 280/300	51100382
	30	0.25	-20 to 300/320	51100375
	30	1.00	-20 to 280/300	51100386
	60	0.25	-20 to 300/320	51100377
	60	1.00	-20 to 280/300	51100389
0.53	15	0.50	-20 to 260/280	51100378
	15	1.00	-20 to 260/280	51100383
	30	0.50	-20 to 260/280	51100379
	30	1.00	-20 to 260/280	51100387
	60	0.50	-20 to 260/280	51100380
	60	1.00	-20 to 260/280	51100390

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EL-17

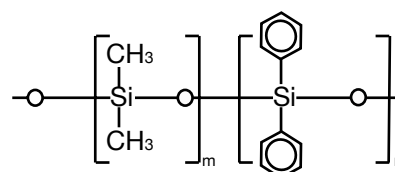
Polymethylphenylsiloxane

- Polymethylphenylsiloxane
- Recommended by pharmacopoeia for determining the impurities of sodium saccharin (o-p-toluenesulphonamides)

EL-17 Equivalent phase

Agilent: HP-17

Structure of Poly(dimethyldiphenyl)siloxane



Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits ($^{\circ}\text{C}$)	Part no.
0.53	10	2.00	40 to 220/240	51100586

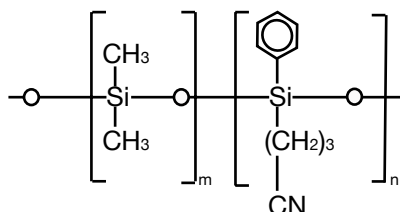


EL-1701

(14%) cyanopropylphenyl-(86%)dimethylpolysiloxane, bonded and cross-linked phase.

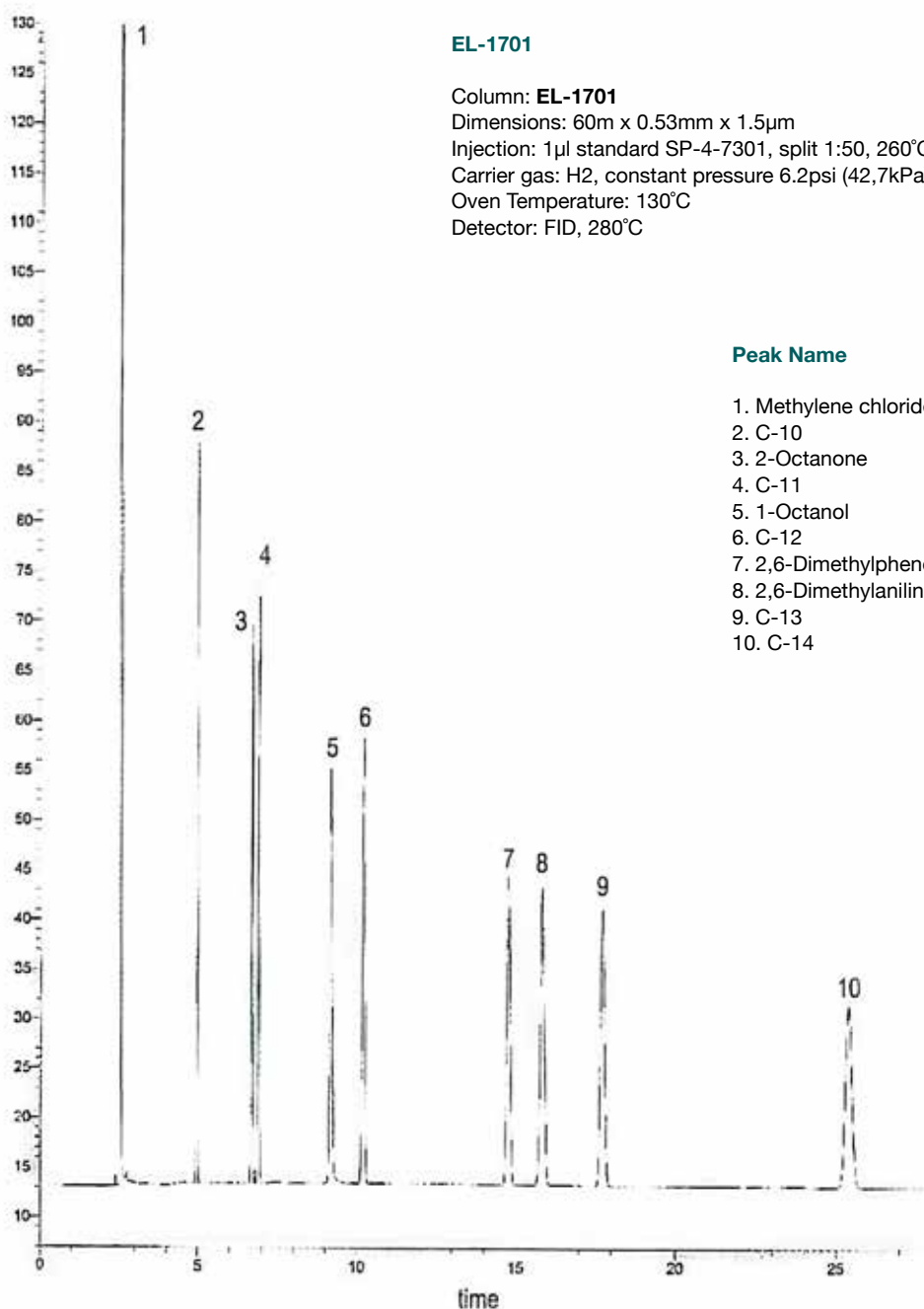
- (14%) Cyanopropyl-phenyl-(86%)dimethylpolysiloxane
- Intermediate polarity column of wide use
- Historically used in the analysis of pesticides

Structure of 14% cyanopropylphenyl-(86%) dimethylpolysiloxane



EL-1701 Equivalent Phase

Aglient: HP-1701, PAS-1701, DB-1701
Supelco: SPB-1701
Restek: Rtx-1701
Varian: CP-SIL 19 CB
Trajan: BP-10
Alltech: AT-1701
Quadtex: 007-1701





Ellutia Capillary Columns

EL-1701

Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits ($^{\circ}\text{C}$)	Part no.	Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits ($^{\circ}\text{C}$)	Part no.
0.10	20	0.10	-20 to 280/280	51100253	0.32	15	0.10	-20 to 280/280	51100245
	20	0.40	-20 to 280/280	51100261		30	0.10	-20 to 280/280	51100248
0.18	10	0.40	-20 to 280/280	51100260		30	0.25	-20 to 280/280	51100257
0.20	15	0.20	-20 to 280/280	51100284		30	0.50	-20 to 270/280	51100266
	30	0.20	-20 to 280/280	51100285		30	1.00	-20 to 260/280	51100275
	60	0.20	-20 to 280/280	51100287		60	0.10	-20 to 280/280	51100251
0.25	15	0.10	-20 to 280/280	51100244		60	0.25	-20 to 280/280	51100259
	15	0.25	-20 to 270/280	51100254		60	0.50	-20 to 270/280	51100269
	15	0.50	-20 to 260/280	51100262		60	1.00	-20 to 260/280	51100278
	15	1.00	-20 to 280/280	51100271	0.53	15	0.10	-20 to 270/280	51100246
30	0.10	-20 to 280/280	51100247	15		0.50	-20 to 260/280	51100264	
	30	0.25	-20 to 280/280	51100256		15	1.00	-20 to 250/280	51100273
	30	0.50	-20 to 270/280	51100265		15	1.50	-20 to 240/280	51100280
	30	1.00	-20 to 260/280	51100274		30	0.10	-20 to 270/280	51100249
	60	0.10	-20 to 280/280	51100250		30	0.50	-20 to 260/280	51100267
	60	0.25	-20 to 280/280	51100258		30	1.00	-20 to 250/280	51100276
	60	0.50	-20 to 270/280	51100268		30	1.50	-20 to 240/280	51100281
	60	1.00	-20 to 260/280	51100277		30	2.0	-20 to 270/280	51100283
0.32	15	0.25	-20 to 280/280	51100255		60	0.10	-20 to 270/280	51100252
	15	0.50	-20 to 270/280	51100263		60	0.50	-20 to 260/280	51100270
	15	1.00	-20 to 260/280	51100272		60	1.00	-20 to 250/280	51100279
						60	1.50	-20 to 240/280	51100282

Medium Polarity



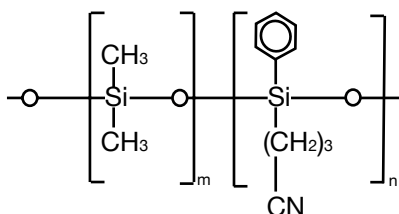


EL-225

(50%) Cyanopropylphenyl-(50%) dimethyl polysiloxane, bonded and cross-linked phase.

- (50%) Cyanopropylphenyl-(50%) dimethyl polysiloxane
- Medium/high polarity column
- Excellent for separating cis-trans isomers of FAMES and sugar derivatives.

Structure of (50%) Cyanopropylphenyl-(50%) dimethyl polysiloxane



EL-225 Equivalent Phase

Aglient: HP-225, DB-225

Restek: Rtx-225

Varian: CP-SIL 43 CB

Trajan: BP-225

Alltech: AT-225

Quadrex: 007-225

Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits ($^{\circ}\text{C}$)	Part no.
0.10	20	0.10	40 to 220/240	51100428
0.18	20	0.20	40 to 220/240	51100442
0.20	15	0.20	40 to 220/240	51100439
	25	0.20	40 to 220/240	51100440
	30	0.20	40 to 220/240	51100441
0.25	15	0.15	40 to 220/240	51100435
	15	0.25	40 to 220/240	51100429
	30	0.15	40 to 220/240	51100437
0.32	30	0.25	40 to 220/240	51100431
	15	0.15	40 to 220/240	51100436
	15	0.25	40 to 220/240	51100430
0.53	30	0.15	40 to 220/240	51100438
	30	0.25	40 to 220/240	51100432
	30	1.00	40 to 200/220	51100433
30	1.00	40 to 200/220	51100434	

EL-225

Column: **EL-225**

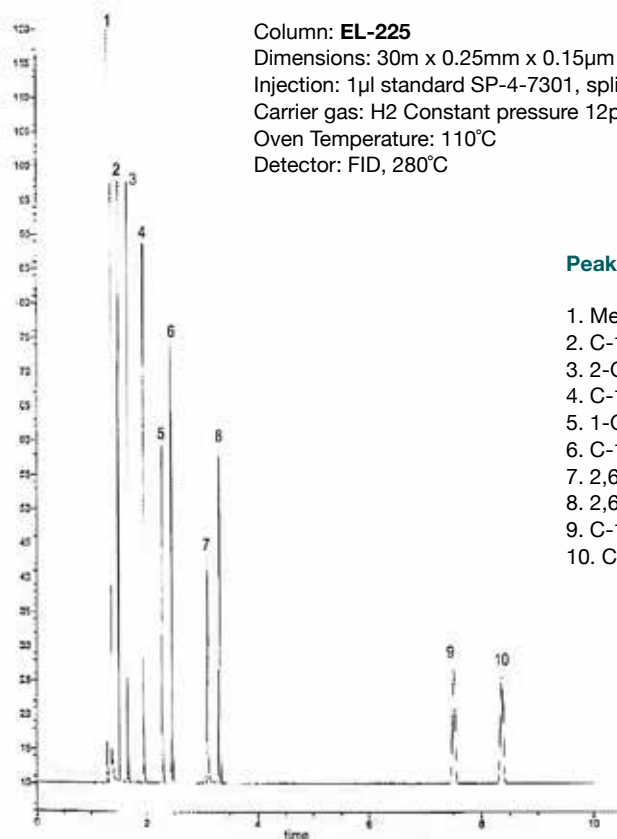
Dimensions: 30m x 0.25mm x 0.15 μm

Injection: 1 μl standard SP-4-7301, split 1:50, 260 $^{\circ}\text{C}$

Carrier gas: H₂ Constant pressure 12psi (82.7kPa)

Oven Temperature: 110 $^{\circ}\text{C}$

Detector: FID, 280 $^{\circ}\text{C}$



Peak Name

1. Methylene chloride
2. C-10
3. 2-Octanone
4. C-11
5. 1-Octanol
6. C-12
7. 2,6-Dimethylphenol
8. 2,6-Dimethylaniline
9. C-13
10. C-14



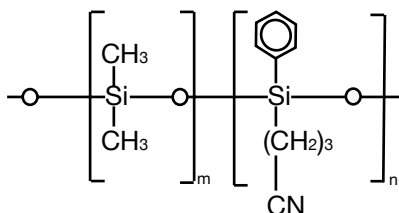
Ellutia Capillary Columns

EL-35

(35%) Diphenyl (65%) Dimethylpolysiloxane, bonded and cross-linked phase.

- (35%) Diphenyl-(65%) dimethylpolysiloxane
- Column of intermediate polarity without cyanopropyl group in its structure
- Excellent confirmation column

Structure of (35%) Diphenyl (65%) Dimethylpolysiloxane



EL-35 Equivalent Phase

Agilent: HP-35, DB-35

Supelco: SPB-35

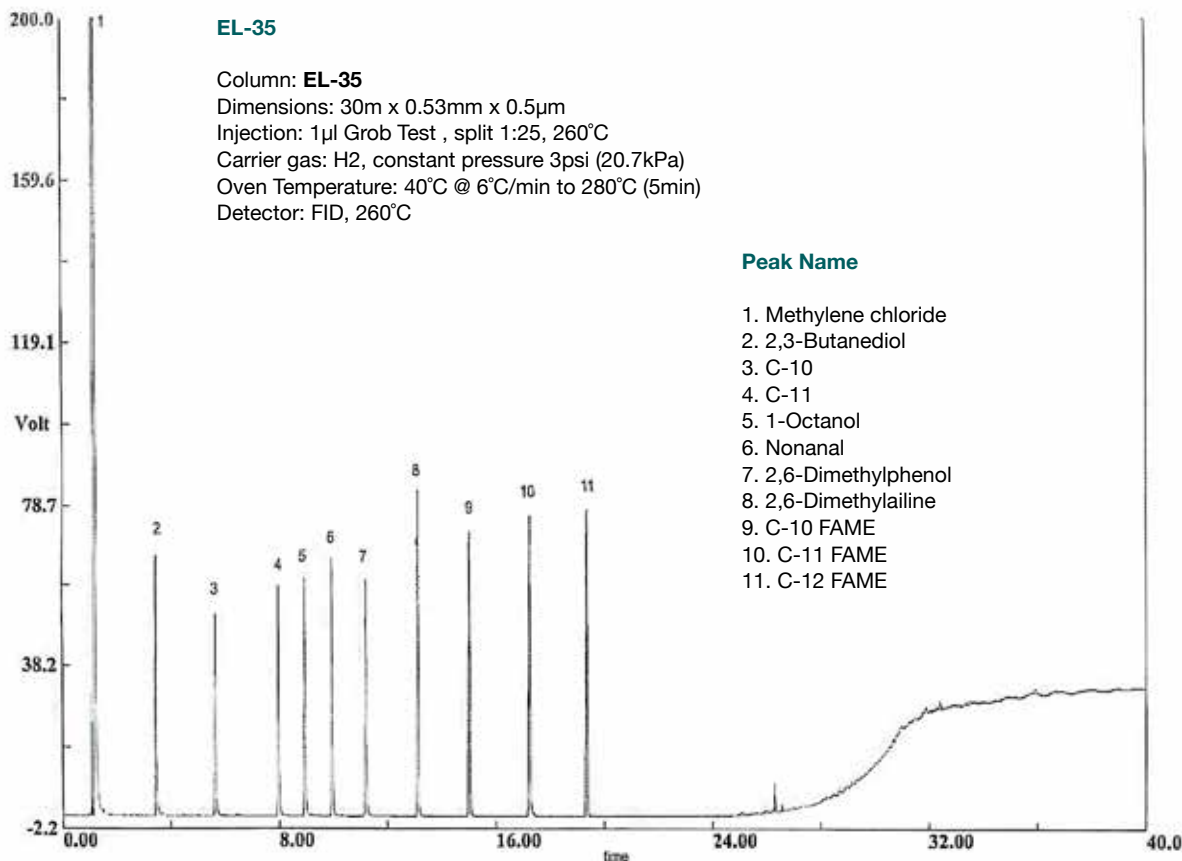
Restek: Rtx-35

Trajan: BPX-35

Alltech: AT-35

Quadrex: 007-11

Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits ($^{\circ}\text{C}$)	Part no.	
0.25	15	0.15	-20 to 300/320	51100545	
	15	0.25	-20 to 300/320	51100530	
	30	0.15	-20 to 300/320	51100547	
	30	0.25	-20 to 300/320	51100532	
	60	0.15	-20 to 300/320	51100549	
	60	0.25	-20 to 300/320	51100534	
0.32	15	0.50	-20 to 290/310	51100536	
	30	0.15	-20 to 300/320	51100548	
	30	0.25	-20 to 300/320	51100533	
	30	0.50	-20 to 290/310	51100538	
	60	0.15	-20 to 300/320	51100550	
	60	0.25	-20 to 300/320	51100535	
	60	0.50	-20 to 290/310	51100540	
	0.53	15	0.50	-20 to 260/280	51100537
		15	1.00	-20 to 260/280	51100542
30		0.50	-20 to 260/280	51100539	
30		1.00	-20 to 260/280	51100543	
30		3.00	-20 to 260/280	51100551	
60		0.50	-20 to 260/280	51100541	
60	1.00	-20 to 260/280	51100544		



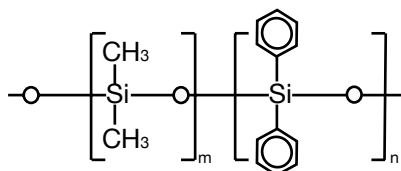


EL-50

(50%) Diphenyl-(50%) dimethyl polysiloxane, bonded and cross-linked phase.

- (50%) Diphenyl-(50%) dimethyl polysiloxane
- Medium polarity column
- Excellent column for confirmation of EL-5 analyses

Structure of (50%) Diphenyl-(50%) dimethylpolysiloxane



EL-50 Equivalent Phase

Agilent: HP-50, +DB-17, DB-608

Supelco: SPB-50, SPB-2250

Restek: Rtx-50, Rxi-17

Varian: CP-SIL 24 CB

Alltech: AT-50

Quadrex: 007-17

Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits ($^{\circ}\text{C}$)	Part no.	Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits ($^{\circ}\text{C}$)	Part no.
0.10	10	0.10	40 to 280/300	51100559	0.32	15	0.15	40 to 280/300	51100581
	10	0.20	40 to 280/300	51100587		15	0.25	40 to 280/300	51100562
	20	0.10	40 to 280/300	51100560		15	0.50	40 to 280/300	51100568
0.18	20	0.18	40 to 280/300	51100576	0.53	30	0.15	40 to 280/300	51100583
	20	0.30	40 to 280/300	51100588		30	0.25	40 to 280/300	51100564
0.25	15	0.15	40 to 280/300	51100580	0.53	30	0.50	40 to 280/300	51100571
	15	0.25	40 to 280/300	51100561		60	0.15	40 to 280/300	51100585
	15	0.50	40 to 280/300	51100567		60	0.25	40 to 280/300	51100566
	30	0.15	40 to 280/300	51100582		60	0.50	40 to 280/300	51100574
	30	0.25	40 to 280/300	51100563		15	1.00	40 to 260/280	51100577
	30	0.50	40 to 280/300	51100570		15	1.00	40 to 260/280	51100578
	60	0.15	40 to 280/300	51100584		30	0.50	40 to 260/280	51100572
	60	0.25	40 to 280/300	51100565		30	1.00	40 to 260/280	51100578
	60	0.50	40 to 280/300	51100573		60	0.50	40 to 260/280	51100575
							60	1.00	40 to 260/280



Ellutia Capillary Columns

EL-50ht

(50%) Diphenyl-(50%) dimethylpolysiloxane, bonded and cross-linked phase.

- (50%) Diphenyl-(50%) dimethylpolysiloxane
- Medium polarity column with high thermal stability
- Best column for triglycerides analysis

EL-50ht Equivalent Phase

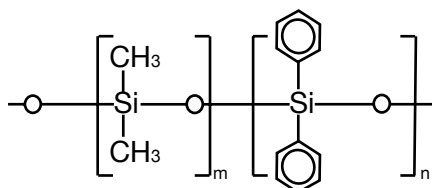
Agilent: DB17ht

Restek: Rtx-65

Varian: TAB-CB

Quadrex: 007-65HT

Structure of Poly(dimethyldiphenyl)siloxane



Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits ($^{\circ}\text{C}$)	Part no.
0.25	15	0.10	50 to 370	51100668
	30	0.10	50 to 370	51100669
	15	0.15	50 to 370	51100671
0.32	30	0.15	50 to 370	51100672
	20	0.10	50 to 370	51100670

EL-50ht

Column: **EL-50ht**

Dimensions: 15m x 0.25mm x 0.15 μm

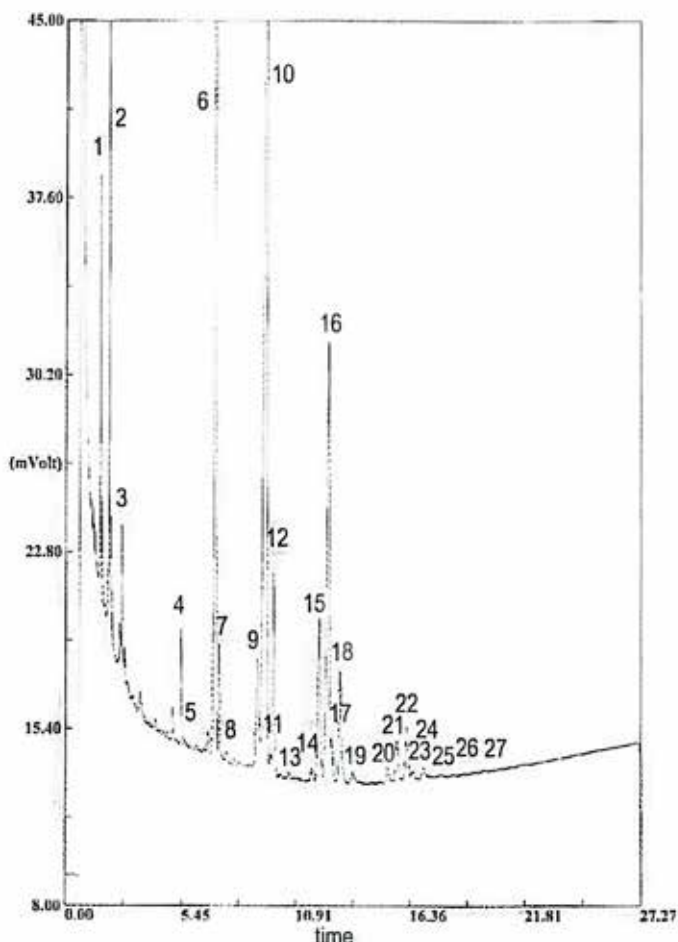
Injection: 0.2mL Triglycerides Palm oil in Isooctane (50mg/mL) , split 1:12

Carrier gas: H₂, Constant pressure, 9psi (56kPa)

Oven Temperature: 340 $^{\circ}\text{C}$ (1min) @ 0.5 $^{\circ}\text{C}/\text{min}$ to 355 $^{\circ}\text{C}$ (5min)

Injector: 380 $^{\circ}\text{C}$ (high temperature septum)

Detector: FID, 380 $^{\circ}\text{C}$



Peak Name

1. D32
2. D34
3. D36
4. MPP
5. MOM
6. PPP
7. MOP
8. MLP
9. PPS
10. POP
11. MOO
12. PLP
13. MLO
14. PSS
15. POS
16. POO
17. PLS
18. PLO
19. PLL
20. SOS
21. SOO
22. OOO
23. SLO
24. OLO
25. OLL
26. SOA
27. AOO



ELM.VOC

Proprietary bonded and cross-linked phase.

- Developed for analysis of volatile organic compounds (VOC)
- Intermediate polarity column

Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits ($^{\circ}\text{C}$)	Part no.
0.18	20	1.0	-20 to 240/250	51100901
0.20	10	1.20	-20 to 240/250	51100902
0.25	30	1.50	-20 to 240/250	51100903
	60	1.50	-20 to 240/250	51100904
0.32	60	1.80	-20 to 240/250	51100905
	60	3.00	-20 to 230/240	51100907
0.53	30	3.00	-20 to 230/240	51100906
	60	3.00	-20 to 230/240	51100908
	105	3.00	-20 to 230/240	51100909

ELM.VOC Equivalent Phase

Agilent: DB-502.2, HP-VOC

Supelco: VOCOL

Restek: Rtx-502.2

ELM.VOC

Column: **ELM.VOC**

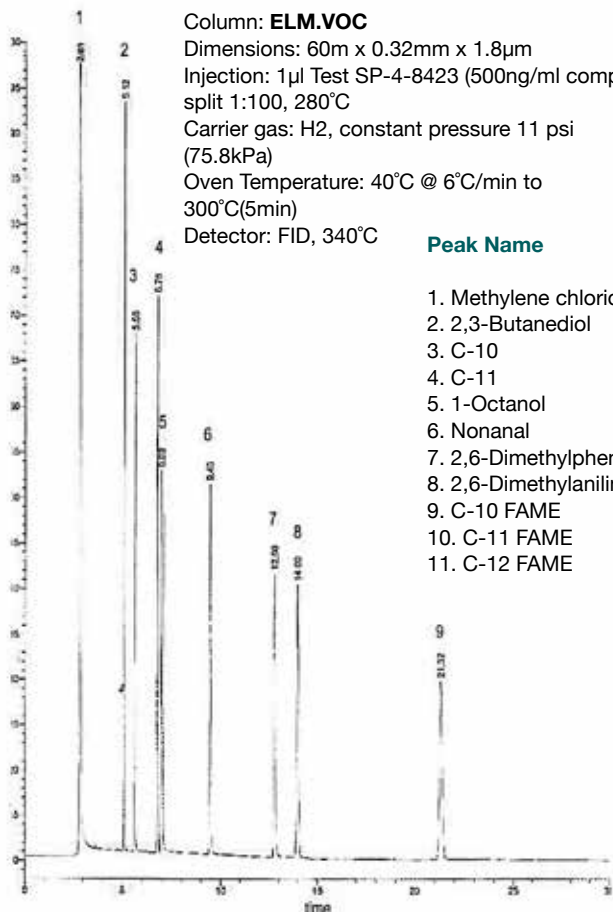
Dimensions: 60m x 0.32mm x 1.8 μm

Injection: 1 μl Test SP-4-8423 (500ng/ml comp), split 1:100, 280 $^{\circ}\text{C}$

Carrier gas: H₂, constant pressure 11 psi (75.8kPa)

Oven Temperature: 40 $^{\circ}\text{C}$ @ 6 $^{\circ}\text{C}/\text{min}$ to 300 $^{\circ}\text{C}$ (5min)

Detector: FID, 340 $^{\circ}\text{C}$



Peak Name

1. Methylene chloride
2. 2,3-Butanediol
3. C-10
4. C-11
5. 1-Octanol
6. Nonanal
7. 2,6-Dimethylphenol
8. 2,6-Dimethylaniline
9. C-10 FAME
10. C-11 FAME
11. C-12 FAME

Medium Polarity

EL-608

Proprietary bonded and cross-linked phase.

- Specifically designed for analysing chlorinated pesticides and PCBs
- Designed for the EPA 508, 608 and 8080 methods.

EL-608 Equivalent Phase

Agilent: HP-608

Supelco: SPB-608

Trajan: BP-608

Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits ($^{\circ}\text{C}$)	Part no.
0.25	15	0.25	-20 to 300/310	51100552
	30	0.25	-20 to 300/310	51100553
0.53	15	0.50	-20 to 300/310	51100554
	30	0.50	-20 to 300/310	51100555
	15	0.83	-20 to 300/310	51100556
	30	0.83	-20 to 300/310	51100557



Ellutia Capillary Columns

ELM-BLOOD 1 & ELM-BLOOD 2

Stationary phases specially designed for the analyses of volatiles in blood.

- Bonded and cross linked phases
- For analysis of volatile compounds in biological fluids
- Extremely low analysis time
- Possibility of utilisation in dual system, as analytical and as well confirmation column
- Order of elution different for some compounds

ELM-BLOOD 1 & ELM-BLOOD 2 Equivalent Phases

Agilent/JW: DB-ALC1, DB-ALC2

Restek: Rtx-BAC1, Rtx-BAC2

ELM-BLOOD 1

Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits ($^{\circ}\text{C}$)	Part no.
0.32	30	1.80	-20 to 240/260	51100865
0.53	30	3.00	-20 to 240/260	51100866

ELM-BLOOD 2

Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits ($^{\circ}\text{C}$)	Part no.
0.32	30	1.20	-20 to 240/260	51100867
0.53	30	2.00	-20 to 240/260	51100868

Alcohols in Blood

Column: **ELM-BLOOD 1**

Dimensions: 30m x 0.53mm x 3.0 μm

Injection: 1mL Head Space 2t, alcohols standard, split 1:10, 250 $^{\circ}\text{C}$

Carrier gas: He, 80cm/s to 40 $^{\circ}\text{C}$

Oven Temperature: 40 $^{\circ}\text{C}$ (Isothermal)

Detector: FID, 260 $^{\circ}\text{C}$

Column: **ELM-BLOOD 2**

Dimensions: 30m x 0.53mm x 2.0 μm

Injection: 1mL Head Space 2t, sample blood alcohols mix, 250 $^{\circ}\text{C}$

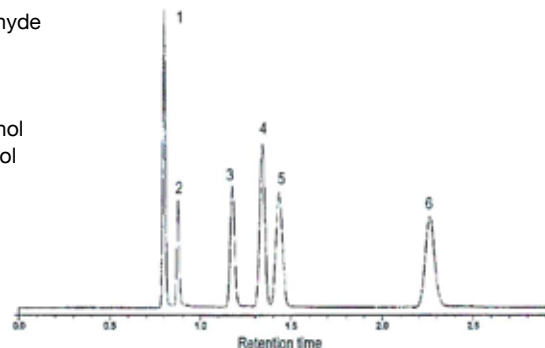
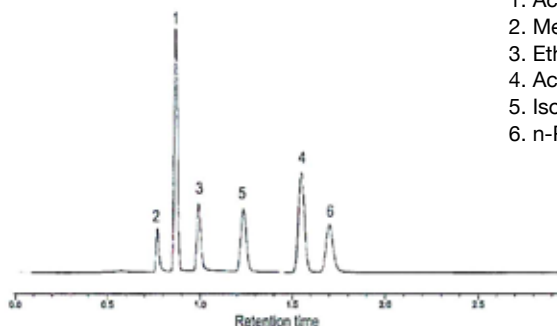
Carrier gas: He, 80cm/s (40 $^{\circ}\text{C}$)

Oven Temperature: 40 $^{\circ}\text{C}$ (Isothermal)

Detector: FID, 260 $^{\circ}\text{C}$

Peak Name

1. Acetaldehyde
2. Methanol
3. Ethanol
4. Acetone
5. Isopropanol
6. n-Propanol



Medium Polarity

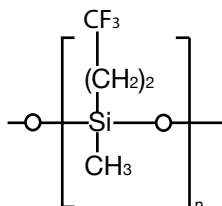


EL-F50

(50%) Trifluoropropyl-(50%) Methylpolysiloxane, bonded and cross-linked phase.

- (50%) Trifluoropropyl-(50%) Methylpolysiloxane
- High polarity column
- Column designed for the EPA 609 and 8140 methods

Structure of (50%) Trifluoropropyl-(50%) Methylpolysiloxane



EL-F50 Equivalent Phase

Agilent: DB-210, DB-200

Restek: Rtx-200

Alltech: AT-210

Quadrex: 007-210

Internal Diam(mm)	Length (m)	Film Thickness (µm)	Temp Limits (°C)	Part no.
0.25	15	0.15	45 to 240/260	51100692
	15	0.25	45 to 240/260	51100682
	15	0.50	45 to 240/260	51100686
0.32	30	0.15	45 to 240/260	51100694
	30	0.25	45 to 240/260	51100684
	30	0.50	45 to 240/260	51100688
0.53	15	0.15	45 to 240/260	51100693
	15	0.25	45 to 240/260	51100683
	15	0.50	45 to 240/260	51100687
0.53	30	0.15	45 to 240/260	51100695
	30	0.25	45 to 240/260	51100685
	30	0.50	45 to 240/260	51100689
0.53	15	1.00	45 to 220/240	51100690
	30	1.00	45 to 220/240	51100691

EL-F50

Column: EL-F50

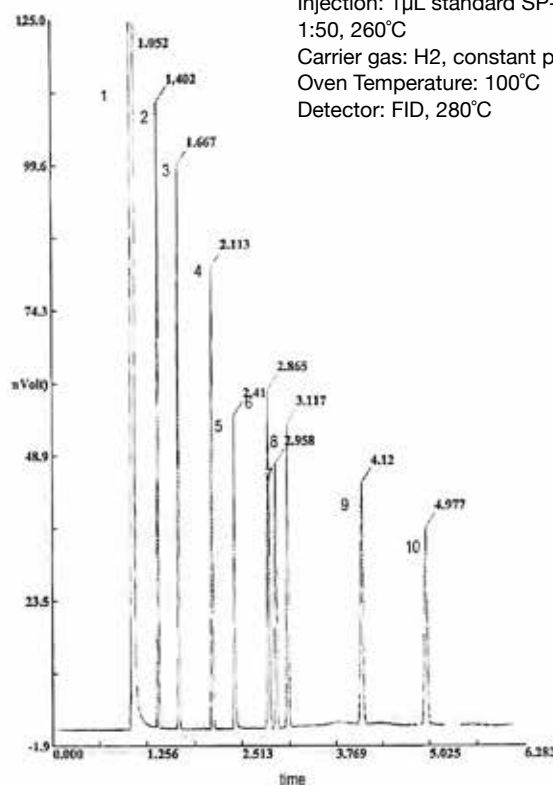
Dimensions: 30m x 0.32mm x 0.5µm

Injection: 1µL standard SP-4-7301 (500ng/mL comp) split 1:50, 260°C

Carrier gas: H₂, constant pressure, 7psi (48.2kPa)

Oven Temperature: 100°C

Detector: FID, 280°C



Peak Name

1. Methylene Chloride
2. C-10
3. C-11
4. C-12
5. 1-Octanol
6. C-13
7. 2-Octanone
8. 2,6-Dimethylphenol
9. C-14
10. 2,6-Dimethylaniline



Ellutia Capillary Columns

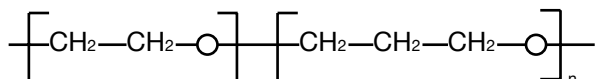


EL-PAG

50% Polyethylene-50% polypropylene glycol, bonded and cross-linked phase.

- (50%) Polyethylene-(50%) polypropylene glycol
- Phase polarity slightly lower than EL-WAX due to the inclusion of groups of propylene oxide
- Polarity similar to UNCON phase

Structure of 50% Polyethylene-50% polypropylene glycol



EL-PAG Equivalent Phase
Supelco: PAG

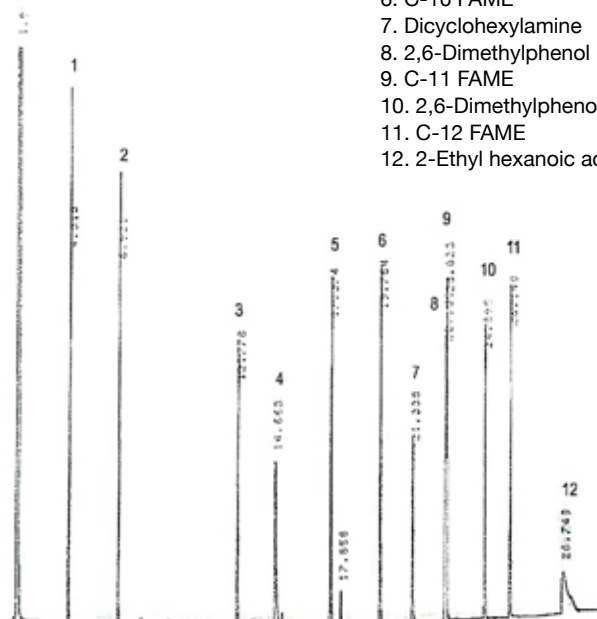
Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits ($^{\circ}\text{C}$)	Part no.
0.25	15	0.25	30 to 220/230	51100673
	30	0.25	30 to 220/230	51100675
	60	0.25	30 to 220/230	51100677
0.32	15	0.32	30 to 220/230	51100674
	30	0.32	30 to 220/230	51100676
	60	0.32	30 to 220/230	51100678
0.53	15	0.50	30 to 220/230	51100679
	30	0.50	30 to 220/230	51100680
	60	0.50	30 to 220/230	51100681

EL-PAG

Column: **EL-PAG**
 Dimensions: 30m x 0.25mm x 0.25 μm
 Injection: 1 μL Test Grob, Split 1:25, 260 $^{\circ}\text{C}$
 Carrier gas: H₂, constant pressure 11 psi (75.8kPa)
 Oven Temperature: 40 $^{\circ}\text{C}$ @ 6 $^{\circ}\text{C}/\text{min}$ to 230 $^{\circ}\text{C}$ (5min)
 Detector: FID, 260 $^{\circ}\text{C}$

Peak Name

1. C-10
2. C-11
2. Nonanal
4. 2,3-Butanediol
5. 1-Octanol
6. C-10 FAME
7. Dicyclohexylamine
8. 2,6-Dimethylphenol
9. C-11 FAME
10. 2,6-Dimethylphenol
11. C-12 FAME
12. 2-Ethyl hexanoic acid





EL-WAX

100% Polyethylene glycol, bonded and cross linked phase.

- 100% Polyethylene glycol (PEG)
- High polarity column
- Wide range of working temperatures and high thermal stability (270°C)
- Ideal for separating alcohols, aldehydes, ketones and aromatic isomers (BTX)

EL-WAX Equivalent Phase

Agilent: HP-20M, INNOWAX, DB-WAX, DBWAXetr

Supelco: SUPELCOWAX-10, Carbowax 20M

Restek: STABILWAX

Varian: CP-WAX 52CB

SGE: BP-20

Alltech: AT-WAX

Internal Diam(mm)	Length (m)	Film (Thickness µm)	Temp Limits (°C)	Part no.
0.10	10	0.10	40 to 260/270	51100292
	10	0.20	40 to 260/270	51100331
	20	0.10	40 to 260/270	51100295
	20	0.20	40 to 260/270	51100334
0.20	15	0.20	40 to 260/270	51100329
	15	0.40	40 to 260/270	51100302
	15	0.50	40 to 260/270	51100306
	30	0.20	40 to 260/270	51100330
	30	0.40	40 to 260/270	51100303
	50	0.40	40 to 260/270	51100304
	60	0.20	40 to 260/270	51100333
	60	0.40	40 to 260/270	51100305
0.22	60	0.20	40 to 260/270	51100332
0.25	15	0.10	40 to 260/270	51100288
	15	0.25	40 to 260/270	51100296
	30	0.10	40 to 260/270	51100290
	30	0.25	40 to 260/270	51100298
	30	0.50	40 to 260/270	51100308
	30	1.00	40 to 260/270	51100315
	60	0.10	40 to 260/270	51100293
	60	0.25	40 to 260/270	51100300
	60	0.50	40 to 260/270	51100312
	0.32	15	0.10	40 to 260/270
15		0.25	40 to 260/270	51100297
15		0.50	40 to 260/270	51100307
25		1.20	40 to 260/270	51100321
30		0.12	40 to 260/270	51100322
30		0.10	40 to 260/270	51100291
30		0.25	40 to 260/270	51100299
30		0.50	40 to 260/270	51100309
50		1.20	40 to 260/270	51100323
60		0.10	40 to 260/270	51100294
60	0.25	40 to 260/270	51100301	
60	0.50	40 to 260/270	51100313	
60	1.00	40 to 260/270	51100318	

EL-WAX

Column: EL-WAX

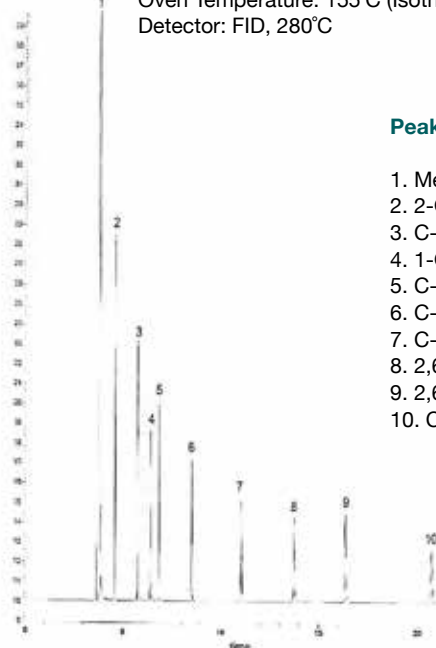
Dimensions: 60m x 0.25mm x 0.25µm

Injection: 1µl Test SP-4-7302 (500ng/mL comp), split 1:25, 260°C

Carrier gas: H₂, constant pressure 24psi (165kPa)

Oven Temperature: 155°C (Isothermal)

Detector: FID, 280°C



Peak Name

1. Methylene chloride
2. 2-Octanone
3. C-15
4. 1-Octanol
5. C-16
6. C-17
7. C-18
8. 2,6-Dimethylaniline
9. 2,6-Dimethylphenol
10. C-20

Internal Diam(mm)	Length (m)	Film (Thickness µm)	Temp Limits (°C)	Part no.
0.32	60	1.20	40 to 230/240	51100324
	100	1.00	40 to 230/240	51100320
0.53	10	1.00	40 to 240/250	51100317
	15	1.00	40 to 240/250	51100314
	15	2.00	40 to 240/250	51100326
	30	0.50	40 to 240/250	51100310
	30	1.00	40 to 240/250	51100316
	30	1.33	40 to 240/250	51100325
	30	2.00	40 to 240/250	51100327
	50	0.50	40 to 240/250	51100311
	60	1.00	40 to 240/250	51100319
	60	2.00	40 to 240/250	51100328



Ellutia Capillary Columns

EL-FFAP

Polyethylene glycol esterified with nitroterephthalic acid, bonded and cross-linked phase.

- 100% Polyethylene glycol (PEG) esterified with nitroterephthalic acid
- Ideal for analysis of free acids (without derivatization), phenols and glycols
- High thermal stability (250°C)

EL-FFAP Equivalent Phase

Agilent: HP-FFAP, DB-FFAP

Supelco: NUKOL, SP-1000

Restek: STABILWAX-DA

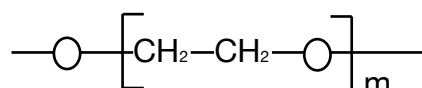
Varian: CP-WAX 58 CP

Trajan: BP-21

Alltech: AT-1000, FFAP

Quadrex: 007-FFAP

Structure of Polyethylene glycol



EL-FFAP

Column: **EL-FFAP**

Dimensions: 60m x 0.25mm x 0.25µm

Injection: 1µL Test SP-4-7302 (500ng/mL comp), split 1:100, 260°C

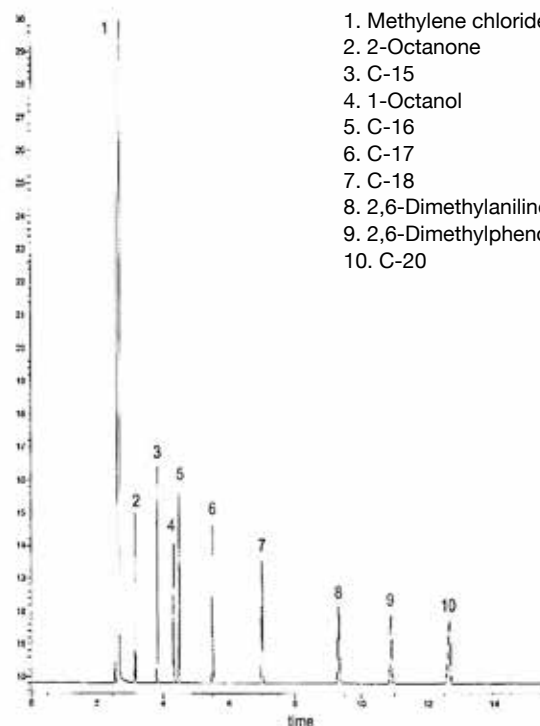
Carrier gas: H₂, constant pressure 24psi (165kPa)

Oven Temperature: 155°C

Detector: FID, 280°C

Peak Name

1. Methylene chloride
2. 2-Octanone
3. C-15
4. 1-Octanol
5. C-16
6. C-17
7. C-18
8. 2,6-Dimethylaniline
9. 2,6-Dimethylphenol
10. C-20



Internal Diam(mm)	Length (m)	Film (Thickness µm)	Temp Limits (°C)	Part no.	
0.10	20	0.1	40 to 240/250	51100335	
	0.20	15	0.30	40 to 240/250	51100353
		30	0.30	40 to 240/250	51100354
0.25	60	0.30	40 to 240/250	51100355	
	0.25	15	0.25	40 to 240/250	51100336
		20	0.25	40 to 240/250	51100342
0.32	30	0.25	40 to 240/250	51100338	
	60	0.25	40 to 240/250	51100340	
	60	0.25	40 to 240/250	51100341	
0.53	15	0.25	40 to 240/250	51100337	
	15	0.50	40 to 240/250	51100343	
	30	0.25	40 to 240/250	51100339	
0.53	30	0.50	40 to 240/250	51100345	
	60	0.25	40 to 240/250	51100347	
	60	0.50	40 to 240/250	51100344	
0.53	15	0.50	40 to 240/250	51100344	
	15	1.00	40 to 230/240	51100349	
	25	1.00	40 to 230/240	51100350	
0.53	30	0.50	40 to 240/250	51100346	
	30	1.00	40 to 230/240	51100351	
	60	0.50	40 to 240/250	51100348	
60	1.00	40 to 240/250	51100352		

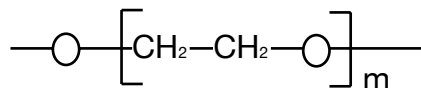


EL-WAX.DB

(100%) Polyethylene glycol, nonbonded phase.

- 100% basic deactivated Polyethylene glycol (PEG)
- Excellent for analysing basic nonderivatised compounds
- Ideal for separating amines and nitrosamines

Structure of Polyethylene glycol



EL-WAX.DB Equivalent Phase

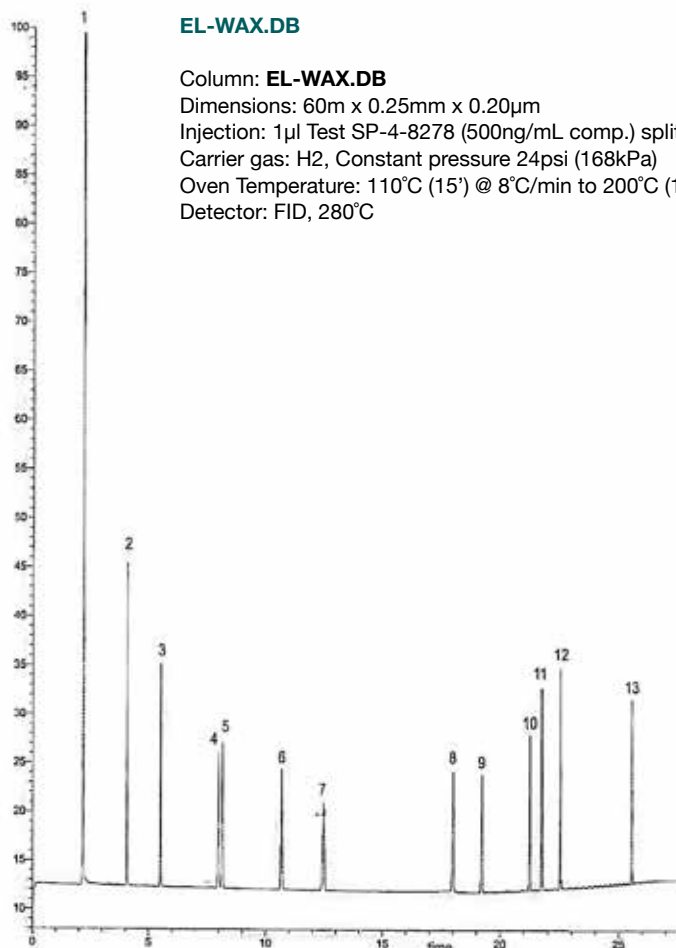
Agilent: CAM, HP-BasicWax

Varian: CP-WAX 51

Supelco: Carbowax-Amine

Restek: Stabilwax-DB

Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits (°C)	Part no.	Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits (°C)	Part no.
0.25	15	0.20	60 to 210/220	51100898	0.32	30	0.50	60 to 210/220	51100890
	15	0.25	60 to 210/220	51100885		30	1.00	60 to 210/220	51100893
	30	0.20	60 to 210/220	51100899		60	1.00	60 to 210/220	51100895
	30	0.25	60 to 210/220	51100887	0.53	15	1.00	60 to 210/220	51100892
	30	0.50	60 to 210/220	51100889		30	0.50	60 to 210/220	51100891
	60	0.20	60 to 210/220	51100900		30	1.00	60 to 210/220	51100894
0.32	15	0.25	60 to 210/220	51100886	30	1.50	60 to 210/220	51100897	
	30	0.25	60 to 210/220	51100888	60	1.00	60 to 210/220	51100896	



Peak Name

1. Tert-butylmethylether
2. N-octylamine
3. N-nonylamine
4. C-15
5. N-decylamine
6. C-16
7. Benzylamine
8. C-17
9. Tri-n-hexylamine
10. C-18
11. 2,6-Dimethylaniline
12. 2,4-Dimethylaniline
13. C-20



Ellutia Capillary Columns

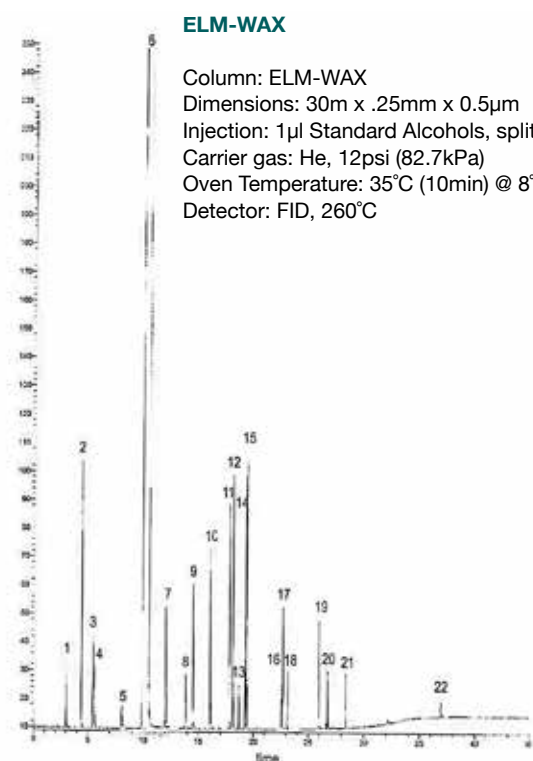
ELM-WAX

100% Polyethylene glycol, bonded and cross linked phase.

- 100% Polyethylene glycol (PEG)
- High polarity column
- Minimum operating temperature (20°C)
- Designed for analysing volatiles in alcoholic beverages
- Excellent symmetry for aldehyde and glycol peaks

ELM-WAX Equivalent Phase

- Agilent:** HP-WAX, DB-WAX
- Varian:** CP-WAX 57 CB
- Restek:** Rtx- WAX



Peak Name

1. Acetaldehyde
2. Methyl acetate
3. Acetal
4. Ethyl acetate
5. Methanol
6. Ethanol
7. Ethyl Butyrate
8. 2-Butanol
9. n-Propanol
10. Isobutanol
11. 1-Butanol
12. 4-Methyl-2-pentanol (l.St.)
13. Ethyl hexanoate
14. 2-Methyl-1-butanol
15. 3-Methyl-1-butanol
16. Hexanol
17. Ethyl lactate
18. Ethyl octanoate
19. Benzaldehyde
20. Ethyl nonanoate
21. Ethyl decanoate
22. 4-Ethylphenol

Polar

Internal Diam(mm)	Length (m)	Film Thickness (µm)	Temp Limits (°C)	Part no.	Internal Diam(mm)	Length (m)	Film Thickness (µm)	Temp Limits (°C)	Part no.	
0.10	10	0.10	20 to 240/250	51100763	0.25	60	0.20	20 to 240/250	51100787	
	10	0.20	20 to 240/250	51100786		60	0.25	20 to 240/250	51100769	
	20	0.10	20 to 240/250	51100764		0.32	15	0.25	20 to 240/250	51100766
	20	0.20	20 to 240/250	51100788			15	0.50	20 to 240/250	51100772
0.18	10	0.18	20 to 240/250	51100777		15	1.00	20 to 230/240	51100779	
	20	0.18	20 to 240/250	51100778		30	0.25	20 to 240/250	51100768	
	20	0.30	20 to 240/250	51100789		30	0.50	20 to 240/250	51100774	
	40	0.30	20 to 240/250	51100790		30	1.00	20 to 230/240	51100780	
0.20	30	1.4	20 to 240/250	51100784		50	0.20	20 to 240/250	51100558	
0.25	15	0.10	20 to 240/250	51100761		60	0.25	20 to 240/250	51100770	
	15	0.25	20 to 240/250	51100765		60	0.50	20 to 240/250	51100776	
	15	0.50	20 to 240/250	51100771		60	0.64	20 to 240/250	51100791	
	25	0.20	20 to 240/250	51100785		60	1.00	20 to 230/240	51100781	
	30	0.10	20 to 240/250	51100762	0.53	15	1.20	20 to 230/240	51100782	
30	0.25	20 to 240/250	51100767	30		0.50	20 to 230/240	51100775		
30	0.50	20 to 240/250	51100773	30		1.20	20 to 230/240	51100783		



ELWAX-280

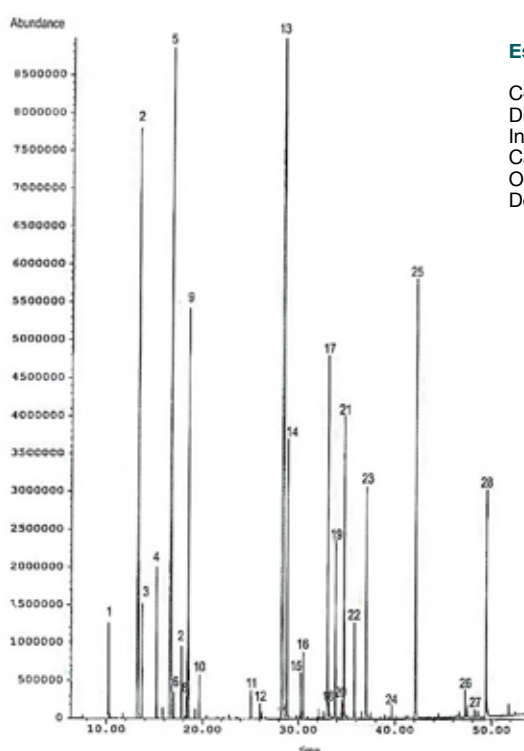
100% Polyethyleneglycol, bonded and cross-linked phase

- 100% Polyethyleneglycol (PEG), bonded cross-linked phase
- Column of high polarity
- Phase practically equivalent to USP G16 phase
- Ample range of operating temperatures and high thermal stability (35°C - 280°C)
- Compatible with water and methanol injections, providing that these solvents be completely vaporised when they enter into the column
- Reproducibility among columns guaranteed.

ELWAX-280 Equivalent Phase

Supelco: Supelcowax™ 10.

Internal Diam(mm)	Length (m)	Film (Thickness µm)	Temp Limits (°C)	Part no.	Internal Diam(mm)	Length (m)	Film (Thickness µm)	Temp Limits (°C)	Part no.
0.10	10	0.10	35 to 280	51100828	0.25	60	0.25	35 to 280	51100835
	15	0.10	35 to 280	51100827		60	0.50	35 to 280	51100844
	15	0.20	35 to 280	51100855	0.32	15	0.25	35 to 280	51100831
	20	0.10	35 to 280	51100829		15	0.50	35 to 280	51100839
	20	0.20	35 to 280	51100859		30	0.25	35 to 280	51100834
0.18	10	0.18	35 to 280	51100846	30	0.50	35 to 280	51100842	
	20	0.18	35 to 280	51100847	30	1.00	35 to 280	51100849	
	20	0.30	35 to 280	51100860	60	0.25	35 to 280	51100836	
	40	0.30	35 to 280	51100861	60	0.50	35 to 280	51100845	
0.20	15	0.20	35 to 280	51100856	60	1.00	35 to 280	51100851	
	30	0.20	35 to 280	51100857	0.53	15	0.50	35 to 280	51100840
	60	0.20	35 to 280	51100858		15	1.00	35 to 280	51100848
	60	0.40	35 to 280	51100837		30	0.50	35 to 280	51100843
0.22	25	0.25	35 to 280	51100832		30	1.00	35 to 280	51100850
	0.25	15	0.25	35 to 280	51100830	30	2.00	35 to 280	51100853
		15	0.50	35 to 280	51100838	60	1.00	35 to 280	51100852
0.25	30	0.25	35 to 280	51100833	60	2.00	35 to 280	51100854	
	30	0.50	35 to 280	51100841					



Essential oil of Flower of Orange tree (Neroli)

Column: ELWAX-280
 Dimensions: 60m x 0.20mm x 0.20µm
 Injection: 0.2µl, split 1:75, 260°C
 Carrier gas: He, 34.7psi
 Oven Temperature: 50°C (4min) @ 4°C/min to 265°C (10min)
 Detector: MS(solvent delay, mass range 29:350m/z) 280°C

Peak Name	
1. β -Pynene	15. Terpinen-4-ol
2. β -Pynene	16. Trans-caryophyllene
3. Sabinene	17. β -Terpyneol
4. β -Myrcene	18. β -Terpenyl
5. Limonene	19. Neryl acetate
6. β -Phellandrene	20. Cyclogermacrene
7. Cis-b-ocymene	21. Geranyl acetate
8. γ -Terpynene	22. Cis-geranylol
9. Trans-b-ocymene	23. Trans-geranylol
10. β -Terpinolene	24. Phenyl acetoneitrile
11. Cis-linalool oxide	25. Nerolydol
12. Trans-linalool oxide	26. Methylantranilate
13. Linalool	27. Trans, trans-farnesyl acetate
14. Linalyl acetate	28. Trans, trans-farnesol



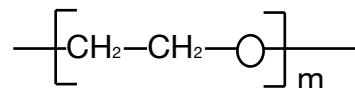
Ellutia Capillary Columns

ELR-WAXOmega

(100%) Polyethylene glycol, bonded and cross-linked phase.

- 100% Polyethylene glycol (PEG)
- High polarity column
- Specially designed for analysis of Omega 3 and Omega 6 fatty acids methyl esters

Structure of Polyethylene glycol

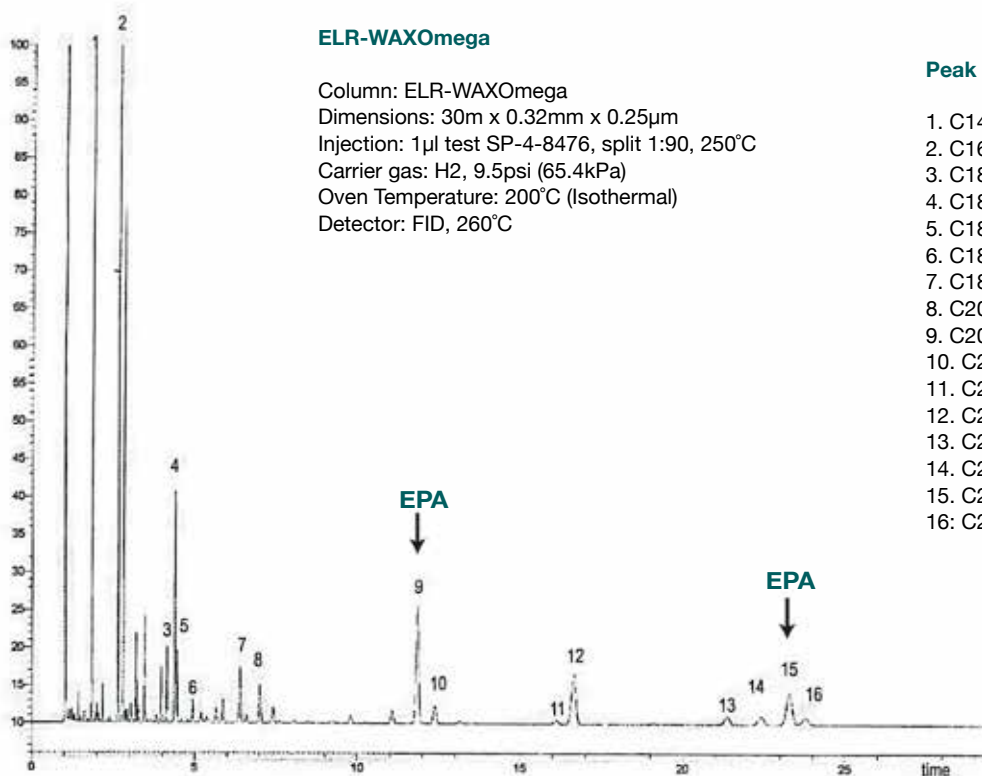


ELR-WAXOmega Equivalent Phase

Supelco: Omegawax

Restek: Famewax

Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits (°C)	Part no.
0.25	30	0.25	40 to 260/270	51100862
0.32	30	0.25	40 to 260/270	51100863
0.53	30	0.50	40 to 260/270	51100864



Polar



ELR-CN100

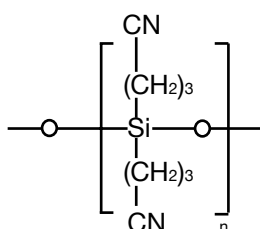
(100%) Cyanopropyl polysiloxane, non-bonded phase.

- 100% Cyanopropyl polysiloxane
- Column of maximum polarity
- Designed for separating fatty acids methyl esters (FAMES)
- High selectivity towards cis-trans isomers of FAMES

ELR-CN100 Equivalent Phase

Supelco: SP-2340, SP-2380
Restek: Rt-2330, Rt-2580
Varian: CP-SIL 88

Structure of (100%) Cyanopropyl polysiloxane



Internal Diam(mm)	Length (m)	Film (Thickness μ m)	Temp Limits ($^{\circ}$ C)	Part no.	
0.18	75	0.14	40 to 240/250	51100870	
	0.25	15	0.20	40 to 240/250	51100871
		30	0.20	40 to 240/250	51100874
0.32	50	0.20	40 to 240/250	51100877	
	60	0.20	40 to 240/250	51100878	
	100	0.20	40 to 240/250	51100881	
	15	0.20	40 to 240/250	51100872	
0.53	30	0.20	40 to 240/250	51100875	
	60	0.20	40 to 240/250	51100879	
	15	0.20	40 to 225/250	51100873	
0.53	30	0.20	40 to 225/250	51100876	
	60	0.20	40 to 225/250	51100880	

Maximum Separation of CIS-TRANS FAMES

Column: **ELR-CN100**

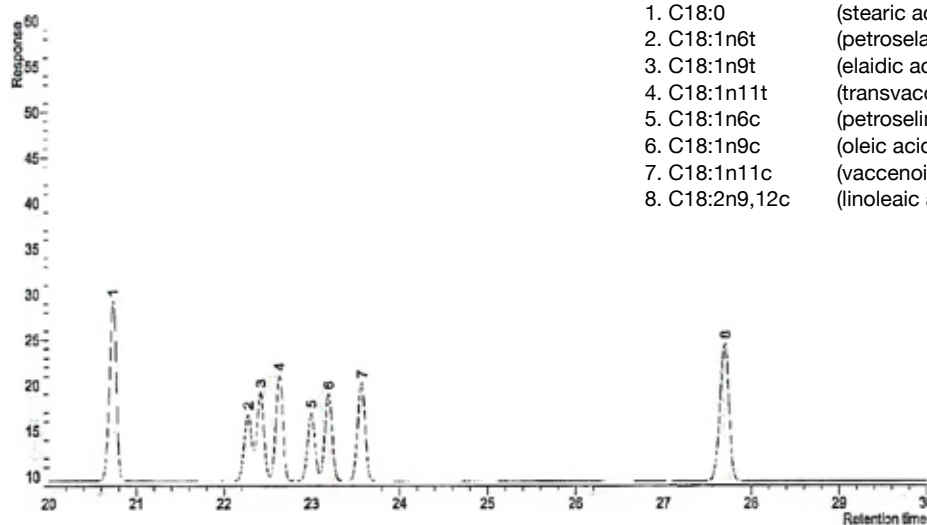
Dimensions: 100m x 0.25mm x 0.20 μ m

Injection: 0.5 μ l cis/trans FAMES standard (10mg/mL) split 1:80, 260 $^{\circ}$ C

Carrier gas: H₂, Constant flow 0.8mL/min

Oven Temperature: 175 $^{\circ}$ C

Detector: FID, 260 $^{\circ}$ C



Peak Name

1. C18:0 (stearic acid methyl ester)
2. C18:1n6t (petroselaic acid methyl ester)
3. C18:1n9t (elaidic acid methyl ester)
4. C18:1n11t (transvaccenic acid methyl ester)
5. C18:1n6c (petroselinoic acid methyl ester)
6. C18:1n9c (oleic acid methyl ester)
7. C18:1n11c (vaccenic acid methyl ester)
8. C18:2n9,12c (linoleic acid methyl ester)



Ellutia Capillary Columns

ELR-TCEP

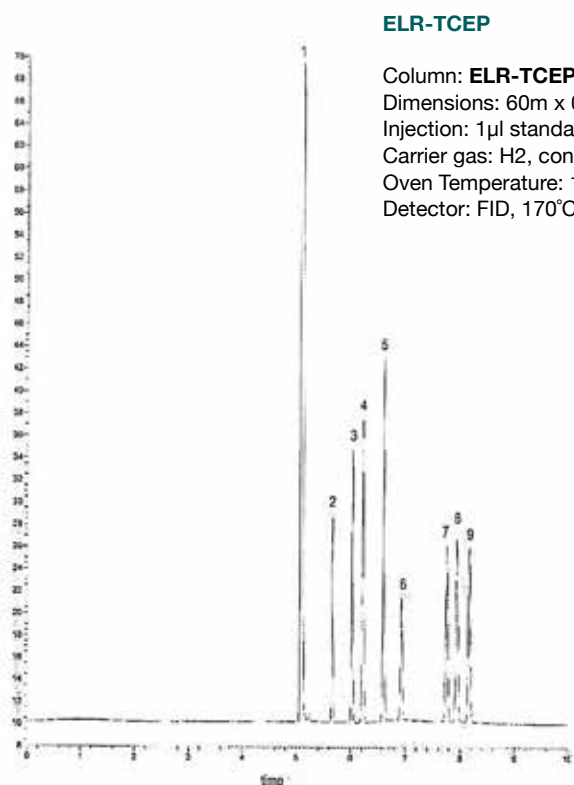
1, 2, 3-tris (2-cyanoethoxy) propane, nonbonded phase.

- High polarity column
- Column for analysis of alcohols in gasoline
- Separation of the aliphatic hydrocarbons up to C12 in aromatics

ELR-TCEP Equivalent Phase

Supelco: TCEP
Restek: Rt-TCEP
Varian: CP-TCEP

Internal Diam(mm)	Length (m)	Film (Thickness μm)	Temp Limits ($^{\circ}\text{C}$)	Part no.
0.25	30	0.40	0 to 135	51100910
	50	0.40	0 to 135	51100911
	60	0.40	0 to 135	51100912



ELR-TCEP

Column: **ELR-TCEP**

Dimensions: 60m x 0.25mm x 0.40 μm

Injection: 1 μl standard (20ng/mL comp), split 1:50, 170 $^{\circ}\text{C}$

Carrier gas: H₂, constant pressure 24psi (165kPa)

Oven Temperature: 110 $^{\circ}\text{C}$

Detector: FID, 170 $^{\circ}\text{C}$

Peak Name

1. Isooctane
2. C-11
3. C-12
4. Benzene
5. C-13
6. Toluene
7. Ethylbenzene
8. p-Xylene
9. Cumene



Packed Columns

Our columns are packed and shaped to the highest standards. The columns can be made to different lengths, packing weight, mesh size, tubing, internal and external diameter and made with different packing material.

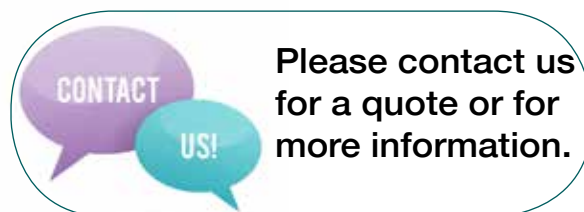
We can make packed columns to your specifications and needs, the columns can also be shaped to your drawing.

We stock the following packing materials:

- Silica Gel
- Porapak Q
- Porapak PS
- HayeSep N
- HayeSep Q
- Molecular Sieve 5A
- Molecular Sieve 5A (washed)
- Molecular Sieve 13x
- Molecular Sieve 13x (washed)
- Oxy-Trap from Alltech AT column
- 5% Carbopack B
- 30% Squalene on Chromosorb P
- 2% Squalene on Activated Charcoal
- Tenax TA
- 3% FFAP on Chromosorb WHP
- 8% FFAP on Chrom WAW DMCS
- 3% OV1 on Chrom W-HP
- 5% Carbowax 20M on Carbopack
- 5% Carbowax 20 W on Chromopack BAW

And the following tubing materials

- Stainless Steel
- Sulfinert
- PEEK
- PTFE





7000 Flowmeter

Flow Measurement

Accurate and repeatable gas flow measurements are a crucial part of obtaining good results from your Gas Chromatograph. The new 7000 GC Flowmeter makes gas flow measurement easier and more accurate, helping to eliminate user errors.

The pocket sized 7000 GC Flowmeter is designed and manufactured in the UK. A large OLED display makes reading flows clear and easy, whilst the built in rechargeable battery means the user no longer has to worry about changing dead batteries.

The 7000 GC Flowmeter has a 25 point calibration traceable to ISO 17025 standards, to ensure the level of accuracy required in a professional laboratory. Users are able to set the temperature and pressure of their working environment and the 7000 GC Flowmeter will automatically compensate for these changes from its calibration conditions.



Designed for Gas Chromatography

The Ellutia 7000 GC Flowmeter provides as standard, measurement of eight gases commonly used in gas chromatography.

In addition to the standard flow measurement mode the 7000 GC Flowmeter also features;

Linear Velocity

The user is able to select their column diameter in the options menu, the linear velocity can then be calculated and displayed. The user can easily switch between standard flow and linear velocity with a single button press.

Split Flow Calculation

Split flow mode allows the user to measure and store a column flow, the user can then measure the split flow and the 7000 GC Flowmeter displays both the flow rate and the split ratio.

Specification

Range: 0.1 to 500 ml/min (0.1 to 275 ml/min for Carbon Dioxide)

Resolution: 0.1 ml/min

Accuracy: ± 0.4 ml/min or 2.5% of reading

Gases: Air, Argon, Argon/5% Methane, Carbon Dioxide, Helium, Hydrogen, Nitrogen, Oxygen

Size: 68 x 130 x 30 mm

Weight: 150 g

Calibration: Annually

Traceability: Calibration traceable to ISO 17025 standards



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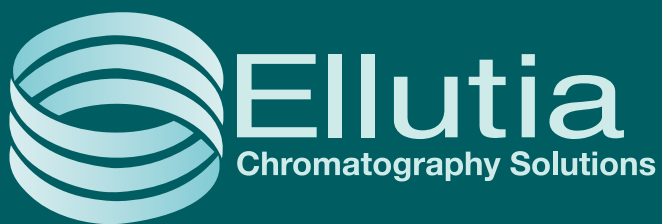
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