

*Trusted quality, services and price!*



# ***Abel Bonded GC Columns***

***Abel Authorized distributor***

1274(A-16)  
105X37.1mm

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## AbelBonded (AB) GC Columns

Abel offers Abel Bonded (AB) series gas chromatographic capillary columns:

- Complete stationary phase selections, Polysiloxane, Polyethylene glycol and PLOTs;
- Consistent high performance such as low column bleed, more inert and high efficiency;
- Great peak shapes;
- Individually tested to meet the tightest quality control specifications;
- Competitive price;

### ■ AbelBonded GC column performances

Column performances are characterized as stationary phase, column selectivity and retention time. AB GC columns are reengineered and made by the same stationary phases as most column makers with stringent process control to replicate column selectivity and retention time in order to ensure seamless column switching. Table I to III illustrate the performance comparisons of the most popular stationary phases: AB-5MS and AB-Inowax vs the brand name columns.

Table I AB-5MS Comparisons at 135°C

Column Brand	AB-5MS	Brand H-5MS	Brand D-5MS
RI (Methyl Decanoate)	1324.0 ± 1.0	1324.2	1323.7
RI (Acenaphthylene)	1462.0 ± 1.0	1462.1	1462.1
RI (1-Dodecanol)	1473.5 ± 1.0	1474.2	1473.7
K'(Pentadecane)	6.0 ± 0.6	5.9	6.4
K'(Undecane)	0.7	0.69	0.76
Temperature Limits	-60 to 325/350°C	-60 to 325/350°C	-60 to 340/360°C

Table II AB-Inowax Comparisons at 130°C

Column Brand	AB-Inowax	Brand H-Innowax	AB-CarboWax (true PEG column)
RI (Methyl Undecanoate)	1715.8	1716.2	1699.6
RI (1-Decanol)	1779.8	1779.7	1752.1
K'(Tetradecane)	0.51	0.54	
K'(2,6-Dimethylphenol)	9.31	9.81	
Temperature Limits	40 to 260/280°C	50 to 260/280°C	50 to 220°C
Crosslinked and Bonded	Yes	Yes	No

## ■ Unsurpassed and totally inert surface

It is not an industrial secrecy that most brand name products exhibit slightly acidic or basic surfaces. As the surfaces of these brand name columns are deactivated with either basic silane or acidic silane, these surfaces are bias inert to basic or acidic compounds. The methods of surface deactivation and processes employed by some column makers lack controllability, hence, the surfaces are not completely deactivated. In other words, they are not totally inert. As a result of non-neutral surface, some brand name columns are more or less limited in certain applications, such as the analyses of amine, sulfur, pesticides, environmental sample, and others. Non-neutral surface of a column not only produces inaccurate quantification but also sometimes produces small difference in separation and column selectivity. Abel has developed a proprietary surface deactivation technique to produce totally inert surface columns.

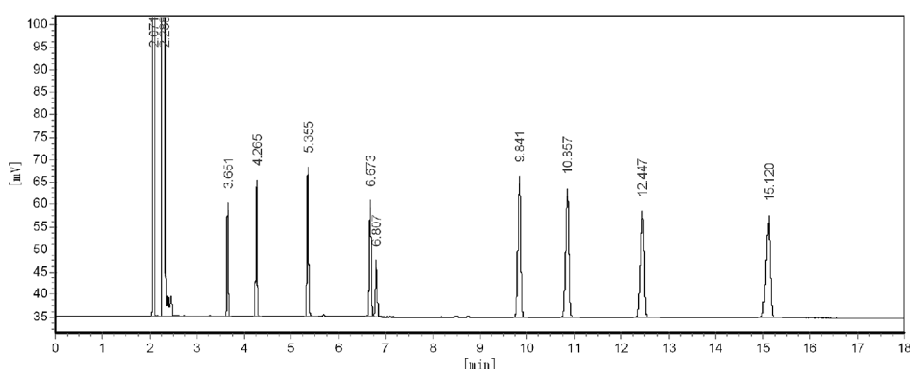


Fig 1, AB-1 MS surface

Fig 1 demonstrates totally inert surface of AB-1 columns. Acid (4-chlorophenol, RT 4.265min), base (decylamine, RT 5.355min) and alcohol (1-decanol, RT 12.447min) exhibit symmetric peak shapes. Both AB-1 and AB-5 columns have best neutrally inert surfaces fit all applications.

## ■ Very low column bleed

Low column bleed is an industrial trend to push applications to new limits, such as temperature limit, and detection limit. Low column bleed also implies long life time of column. Low column bleed means crosslinked and bonded stationary phases.

All stationary phases of AB GC columns are carefully made in-house to ensure controllable column selectivity and low column bleed. Most stationary phases are crosslinked and bonded after column preparations. Without any compromise, most AB GC columns are tested for column bleed.

Table III shows the specs of AB-5MS.

Table III Column Bleed Comparison

Brand Name	AB-5MS	Brand H-5MS	Brand D-5MS
Theoretical Plate /meter (0.25mm ID)	>3800	>3500	>3600
Column Bleed	<4pA @325℃	<4pA @320℃	<4pA@325℃
Temperature Limit ( °C)	-60-325/350	-60-325/350	-60-340/360

## ■ Stringent quality control

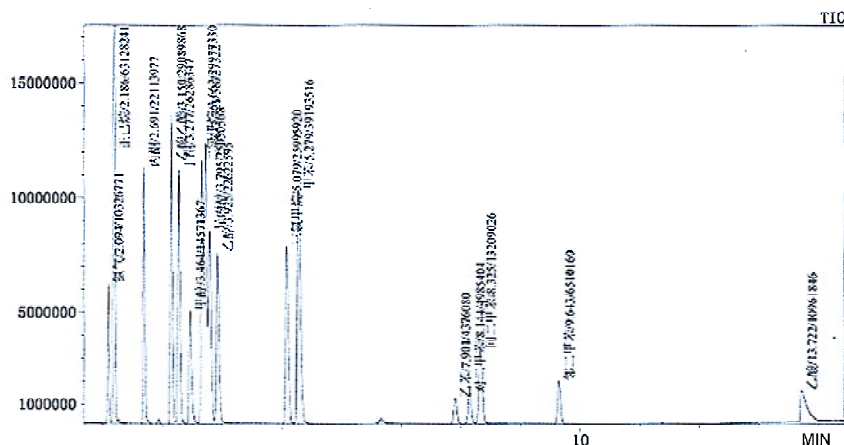
All AB GC columns are gone through testing with the toughest samples among industrial standards to maintain the highest quality. The published specs in Table III show Abel's confidence in maintaining stringent quality without any compromise. As a result, AB columns have consistent high performance delivered to its end users.

In summary, AB GC columns are carefully made at the highest industrial quality standard. AB GC columns replicate the performances of brand name ones in column selectivity and retention times. AB GC columns are totally inert and have very low column bleeds. They can fit all known applications and may produce improved result over that produced on a brand name column.

In return of using AB GC columns, the end users will experience and benefit:

### 1) Same or improved separations

Seamless column is shown also by the same or improved separation. Fig 2 is a GC-MS analysis of solvent mix in a drug sample on an AB-Inowax column, 0.25mm x 30m x 0.25um p/n 2025-3002). In addition to the baseline separations of all solvents, this PEG type of AB-Inowax column has very low column bleed, make it be used in GC-MS that quickly identifies all solvent peak at one snap shot.



## 2)Challenging analysis

Challenging analysis that analyzes difficult sample often is done on the highest quality column. EPA 8472 is one example of the challenging analyses. Highest quality column must have right column selectivity, extended temperature limited, low column bleed, highest column plate number, and complete inert surface. AB-5MS is one of the highest quality columns that are able to perform such an analysis.

Fig 4a shows the chromatogram of this analysis. In this application, this AB-5MS column still produces symmetric and sharp peak of 1ppm Benzidine because of its complete inert surface.

Fig 4b shows another example that requires surface inertness, where, AB-5MS column produces symmetric peaks of all strong bases and acids.

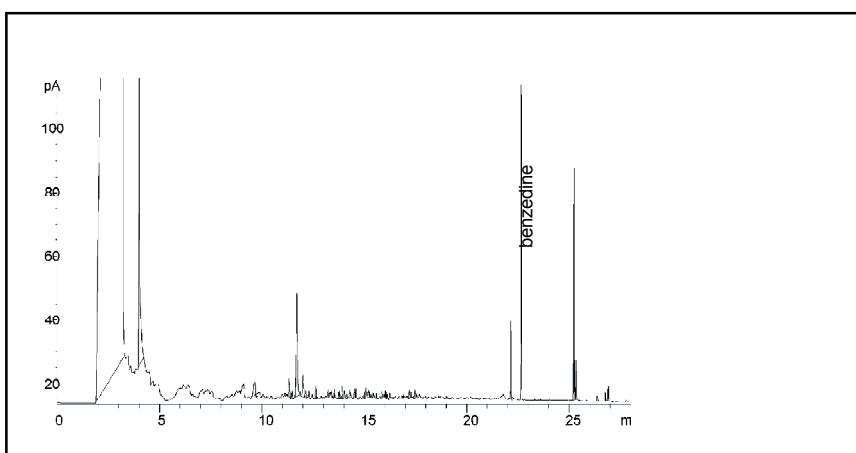


Fig 4 AB-5MS. (a) EPA 8270

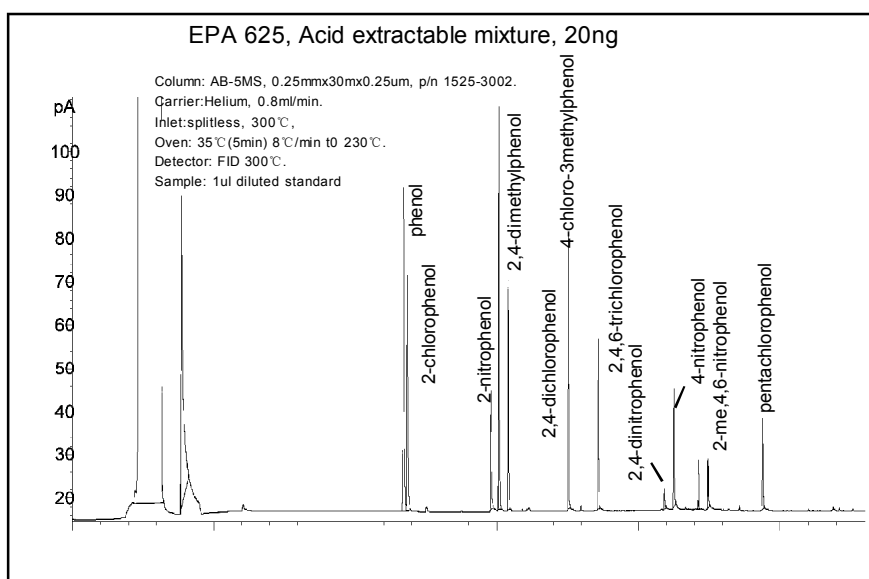


Fig 4 AB-5MS. (b) EPA 625

Fig 5 shows the separation of residue solvent vapor, isopropyl alcohol and dichloromethane in a pharmaceutical application with head-space technique. In this application, the isopropyl alcohol is eluted before dichloromethane with a resolution of 1.68 on an AB-Inowax column, producing a baseline separation for this critical pair separation.

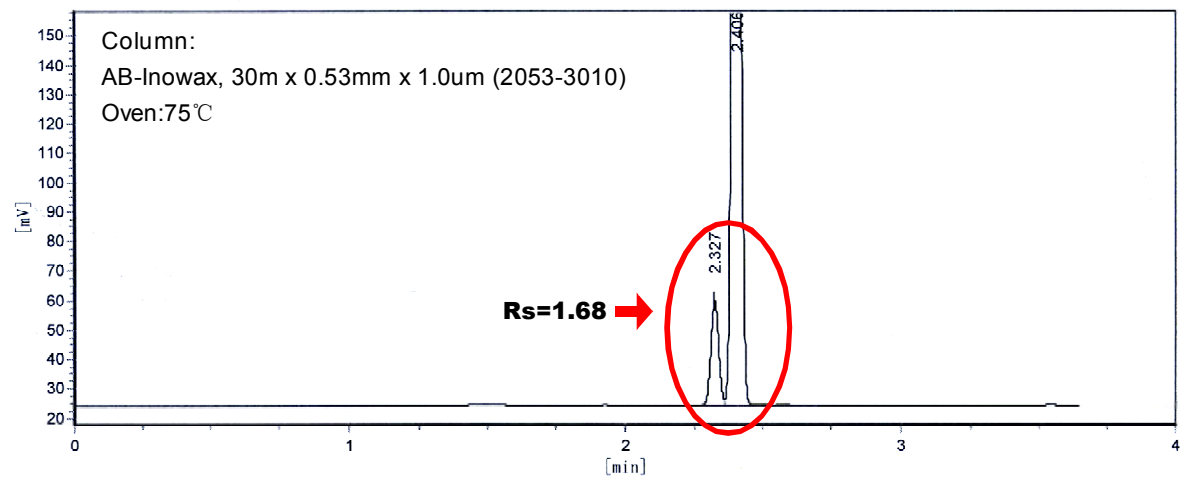


Fig 5. Isopropyl Alcohol and Dichloromethane separation

Fig. 6 is analysis of impurity in ethylene by an AB-PLOT Al<sub>2</sub>O<sub>3</sub> at 100C. The sample is 99% ethylene and 1% acetylene. Low level of impurities of methane and ethane (around 1ppm) are detected at high temperature 100C, with well separations achieved.

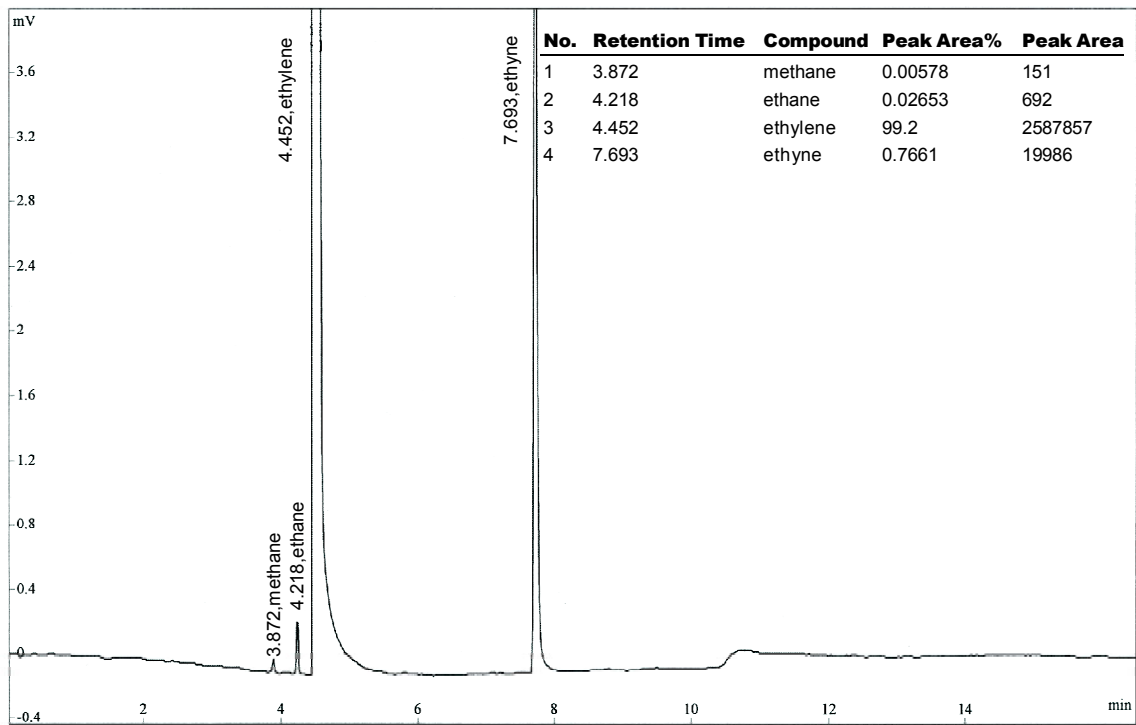


Fig. 6 Impurities in ethylene

### 3) High performances of difficult-to-make columns

Abel has developed its own innovative and proprietary column technology that enables Abel easily produces many superior columns that are used to difficult to make. Fig 7 demonstrates exceptionally well particle immobilization of AB-PLOT Q columns. In this programmable run, AB-PLOT Q columns was quickly heated to 300C at 15C/min, its baseline exhibits no spike that is often caused by particle dislodging from column coatings

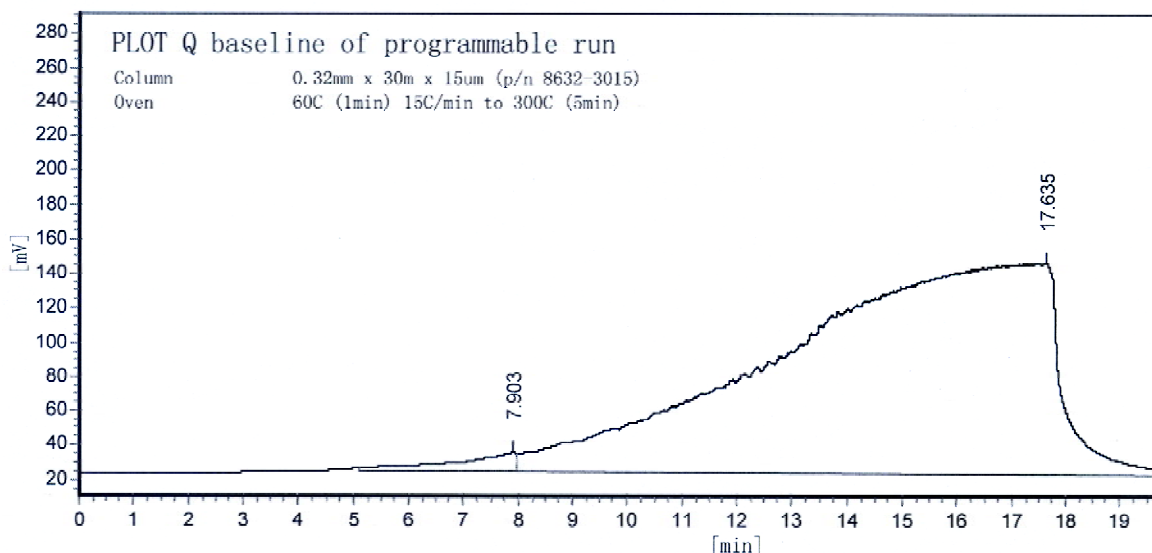


Fig. 7 Immobilization of AB-PLOT Q column

### 4)Competitive price and complete offer

Abel manufactures complete of AB GC columns, from non-polar, mid polar, to PEG and PLOT stationary phases. Column dimension ranges from 0.20mm to 0.53mm, 1m to 105m and 0.05um to 5um. Table "Abel Bonded Column Offers"(page:26) shows the complete offers of AB GC columns and its approximate/exact replacement of brand name ones.

Additionally, Abel offers complete stationary phase columns with quick delivery. Abel can deliver the stocking items (mostly popular standard columns) within 48 hours after receiving your orders. Abel has had a solid track record to deliver non-stock column within two to four weeks.

AB column prices are 75-90% of the brand name ones. If you order more than two columns, we can further offer you volume discount. This feature will significantly save your cost in this apparent recession year. Please contact Annie\_nie@abel-industries.com for any tech support issue. You can order AB GC columns by email to Annie\_Nie@abel-industries.com or fax at 1-(604)-677-5866.

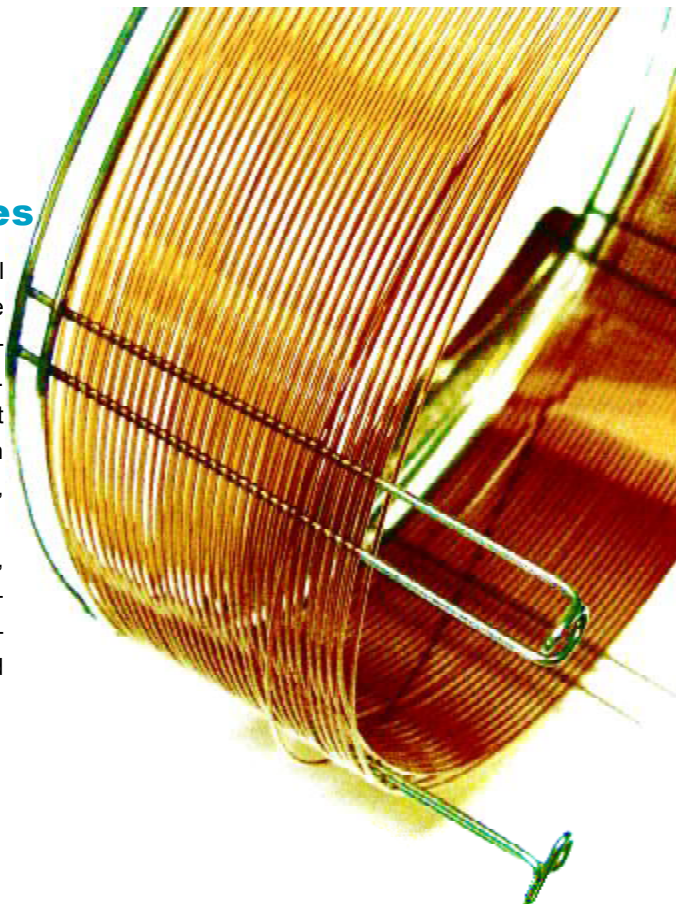
Worldwide distributors and OEM are welcome.



## Polysiloxane Based Stationary Phases

Polysiloxanes are most common stationary phases for general separations. They are relatively stable, robust and versatile to wide range of applications. Different functional group substitute to the methyl group on silicon atom characterizes the polarity of polysiloxane. Carefully controlling the polymer synthesis, capillary surface treatment and other manufacturing processes can control the column characteristics, such as polarity, retention, efficiency and inertness, and repeatability of column performance to very tight windows.

Abel offers non-polar and mid-polar polysiloxane phase columns, AB-1 and AB-5 as non-polar phases, AB-35, AB-1301, AB-1701 as mid-polar phases, and special designed mid-polar phases for environment applications, AB-624. All columns have lower column bleeds and better surface inertness for wide range of challenging applications.



### ■ AB-1

- 100% bonded and crosslinked dimethylpolysiloxane
- Non-polar, equivalent to USP phase G2
- Solvent rinseable and high temperature limit
- Wide range of column dimensions and stationary phase film thicknesses
- Low column bleed, inert surface and high efficiency
- Most popular for general applications

Similar phases: DB-1, HP-1, Ultra-1, SPB-1, RTX-1, CP-Sil 5CB, BP-1, ZB-1, AT-1, MDN-1, OV-1, OV101

### Order Information:

P/N	Description	Length (m)	ID (mm)	Film (μm)	Temperature Limit (C)
0118-1001	AB-1, 10m × 0.18mm × 0.18 μm	10	0.18	0.18	-60 to 325/350
0118-1003	AB-1, 10m × 0.18mm × 0.36 μm	10	0.18	0.36	-60 to 325/350
0118-1004	AB-1, 10m × 0.18mm × 0.40 μm	10	0.18	0.40	-60 to 325/350
0118-2001	AB-1, 20m × 0.18mm × 0.18 μm	20	0.18	0.18	-60 to 325/350
0118-2003	AB-1, 20m × 0.18mm × 0.36 μm	20	0.18	0.36	-60 to 325/350
0118-2004	AB-1, 20m × 0.18mm × 0.40 μm	20	0.18	0.40	-60 to 325/350
0118-4004	AB-1, 40m × 0.18mm × 0.40 μm	40	0.18	0.40	-60 to 325/350
0120-1203	AB-1, 12m × 0.20mm × 0.33 μm	12	0.20	0.33	-60 to 325/350
0120-2501	AB-1, 25m × 0.20mm × 0.11 μm	25	0.20	0.11	-60 to 325/350
0120-2503	AB-1, 25m × 0.20mm × 0.33 μm	25	0.20	0.33	-60 to 325/350
0120-2505	AB-1, 25m × 0.20mm × 0.50 μm	25	0.20	0.50	-60 to 325/350
0120-5001	AB-1, 50m × 0.20mm × 0.11 μm	50	0.20	0.11	-60 to 325/350
0120-5003	AB-1, 50m × 0.20mm × 0.33 μm	50	0.20	0.33	-60 to 325/350
0125-1501	AB-1, 15m × 0.25mm × 0.10 μm	15	0.25	0.10	-60 to 325/350
0125-1502	AB-1, 15m × 0.25mm × 0.25 μm	15	0.25	0.25	-60 to 325/350
0125-1510	AB-1, 15m × 0.25mm × 1.00 μm	15	0.25	1.00	-60 to 325/350
0125-3001	AB-1, 30m × 0.25mm × 0.10 μm	30	0.25	0.1	-60 to 325/350
0125-3002	AB-1, 30m × 0.25mm × 0.25 μm	30	0.25	0.25	-60 to 325/350
0125-3005	AB-1, 30m × 0.25mm × 0.50 μm	30	0.25	0.50	-60 to 325/350
0125-3010	AB-1, 30m × 0.25mm × 1.00 μm	30	0.25	1.00	-60 to 325/350
0125-6002	AB-1, 60m × 0.25mm × 0.25 μm	60	0.25	0.25	-60 to 325/350

**Order Information:**

P/N	Description	Length (m)	ID (mm)	Film (μ m)	Temperature Limit (C)
0125-6005	AB-1, 60m × 0.25mm × 0.50 μ m	60	0.25	0.50	-60 to 325/350
0125-6010	AB-1, 60m × 0.25mm × 1.00 μ m	60	0.25	1.00	-60 to 325/350
0132-1501	AB-1, 15m × 0.32mm × 0.11 μ m	15	0.32	0.11	-60 to 325/350
0132-1502	AB-1, 15m × 0.32mm × 0.25 μ m	15	0.32	0.25	-60 to 325/350
0132-1510	AB-1, 15m × 0.32mm × 1.00 μ m	15	0.32	1.00	-60 to 325/350
0132-2501	AB-1, 25m × 0.32mm × 0.17 μ m	25	0.32	0.17	-60 to 325/350
0132-2505	AB-1, 25m × 0.32mm × 0.52 μ m	25	0.32	0.52	-60 to 325/350
0132-2510	AB-1, 25m × 0.32mm × 1.05 μ m	25	0.32	1.05	-60 to 325/350
0132-3001	AB-1, 30m × 0.32mm × 0.10 μ m	30	0.32	0.10	-60 to 325/350
0132-3002	AB-1, 30m × 0.32mm × 0.25 μ m	30	0.32	0.25	-60 to 325/350
0132-3005	AB-1, 30m × 0.32mm × 0.50 μ m	30	0.32	0.50	-60 to 325/350
0132-3010	AB-1, 30m × 0.32mm × 1.00 μ m	30	0.32	1.00	-60 to 325/350
0132-3030	AB-1, 30m × 0.32mm × 3.00 μ m	30	0.32	3.00	-60 to 260/280
0132-3040	AB-1, 30m × 0.32mm × 4.00 μ m	30	0.32	4.00	-60 to 260/280
0132-3050	AB-1, 30m × 0.32mm × 5.00 μ m	30	0.32	5.00	-60 to 260/280
0132-5001	AB-1, 50m × 0.32mm × 0.17 μ m	50	0.32	0.17	-60 to 325/350
0132-5005	AB-1, 50m × 0.32mm × 0.52 μ m	50	0.32	0.52	-60 to 325/350
0132-5010	AB-1, 50m × 0.32mm × 1.05 μ m	50	0.32	1.05	-60 to 325/350
0132-6001	AB-1, 60m × 0.32mm × 0.10 μ m	60	0.32	0.10	-60 to 325/350
0132-6002	AB-1, 60m × 0.32mm × 0.25 μ m	60	0.32	0.25	-60 to 325/350
0132-6005	AB-1, 60m × 0.32mm × 0.50 μ m	60	0.32	0.50	-60 to 325/350
0132-6010	AB-1, 60m × 0.32mm × 1.00 μ m	60	0.32	1.00	-60 to 325/350
0132-6030	AB-1, 60m × 0.32mm × 3.00 μ m	60	0.32	3.00	-60 to 260/280
0132-6050	AB-1, 60m × 0.32mm × 5.00 μ m	60	0.32	5.00	-60 to 260/280
0153-0501	AB-1, 5m × 0.53mm × 0.15 μ m	5	0.53	0.15	-60 to 320/350
0153-0508	AB-1, 5m × 0.53mm × 0.88 μ m	5	0.53	0.88	-60 to 300/320
0153-0526	AB-1, 5m × 0.53mm × 2.65 μ m	5	0.53	2.65	-60 to 260/280
0153-0550	AB-1, 5m × 0.53mm × 5.00 μ m	5	0.53	5.00	-60 to 260/280
0153-0715	AB-1, 7.5m × 0.53mm × 1.50 μ m	7.5	0.53	1.50	-60 to 280/300
0153-0750	AB-1, 7.5m × 0.53mm × 5.00 μ m	7.5	0.53	5.00	-60 to 260/280
0153-1008	AB-1, 10m × 0.53mm × 0.88 μ m	10	0.53	0.88	-60 to 300/320
0153-1026	AB-1, 10m × 0.53mm × 2.65 μ m	10	0.53	2.65	-60 to 260/280
0153-1050	AB-1, 10m × 0.53mm × 5.0 μ m	10	0.53	5.00	-60 to 260/280
0153-1501	AB-1, 15m × 0.53mm × 0.15 μ m	15	0.53	0.15	-60 to 320/350
0153-1502	AB-1, 15m × 0.53mm × 0.25 μ m	15	0.53	0.25	-60 to 320/350
0153-1505	AB-1, 15m × 0.53mm × 0.50 μ m	15	0.53	0.50	-60 to 300/320
0153-1510	AB-1, 15m × 0.53mm × 1.00 μ m	15	0.53	1.00	-60 to 300/320
0153-1515	AB-1, 15m × 0.53mm × 1.50 μ m	15	0.53	1.50	-60 to 300/320
0153-1530	AB-1, 15m × 0.53mm × 3.00 μ m	15	0.53	3.00	-60 to 260/280
0153-1550	AB-1, 15m × 0.53mm × 5.00 μ m	15	0.53	5.00	-60 to 260/280
0153-3001	AB-1, 30m × 0.53mm × 0.11 μ m	30	0.53	0.11	-60 to 300/320
0153-3002	AB-1, 30m × 0.53mm × 0.25 μ m	30	0.53	0.25	-60 to 300/320
0153-3005	AB-1, 30m × 0.53mm × 0.50 μ m	30	0.53	0.50	-60 to 300/320
0153-3008	AB-1, 30m × 0.53mm × 0.88 μ m	30	0.53	0.88	-60 to 300/320
0153-3010	AB-1, 30m × 0.53mm × 1.00 μ m	30	0.53	1.00	-60 to 300/320
0153-3015	AB-1, 30m × 0.53mm × 1.50 μ m	30	0.53	1.50	-60 to 280/300
0153-3026	AB-1, 30m × 0.53mm × 2.65 μ m	30	0.53	2.65	-60 to 260/280
0153-3030	AB-1, 30m × 0.53mm × 3.00 μ m	30	0.53	3.00	-60 to 260/280
0153-3050	AB-1, 30m × 0.53mm × 5.00 μ m	30	0.53	5.00	-60 to 260/280
0153-5030	AB-1, 50m × 0.53mm × 3.00 μ m	50	0.53	3.00	-60 to 260/280
0153-5050	AB-1, 50m × 0.53mm × 5.00 μ m	50	0.53	5.00	-60 to 260/280
0153-6010	AB-1, 60m × 0.53mm × 1.00 μ m	60	0.53	1.00	-60 to 300/320
0153-6030	AB-1, 60m × 0.53mm × 3.00 μ m	60	0.53	3.00	-60 to 260/280
0153-6050	AB-1, 60m × 0.53mm × 5.00 μ m	60	0.53	5.00	-60 to 260/280

## ■ AB-1MS

- Identical selectivity to AB-1 but with much lower column bleed
- Ideal for GC-MS analysis and first choice of new method development

Similar phases: HP 1MS, DB 1MS, BPX-1, AT-1MS, ZB-1, Rtx-1, CP-Sil 5 CB

### Order Information:

P/N	Description	Length (m)	ID (mm)	Film (μ m)	Temperature Limit (C)
1118-2001	AB-1MS, 20m × 0.18mm × 0.18 μ m	20	0.18	0.18	-60 to 325/350
1118-2003	AB-1MS, 20m × 0.18mm × 0.36 μ m	20	0.18	0.36	-60 to 325/350
1118-2004	AB-1MS, 20m × 0.18mm × 0.40 μ m	20	0.18	0.40	-60 to 325/350
1118-4004	AB-1MS, 40m × 0.18mm × 0.40 μ m	40	0.18	0.40	-60 to 325/350
1120-1503	AB-1MS, 15m × 0.20mm × 0.33 μ m	15	0.20	0.33	-60 to 325/350
1120-2503	AB-1MS, 25m × 0.20mm × 0.33 μ m	25	0.20	0.33	-60 to 325/350
1125-1502	AB-1MS, 15m × 0.25mm × 0.25 μ m	15	0.25	0.25	-60 to 325/350
1125-3001	AB-1MS, 30m × 0.25mm × 0.10 μ m	30	0.25	0.10	-60 to 325/350
1125-3002	AB-1MS, 30m × 0.25mm × 0.25 μ m	30	0.25	0.25	-60 to 325/350
1125-3005	AB-1MS, 30m × 0.25mm × 0.50 μ m	30	0.25	0.50	-60 to 325/350
1125-3010	AB-1MS, 30m × 0.25mm × 1.00 μ m	30	0.25	1.00	-60 to 325/350
1125-6002	AB-1MS, 60m × 0.25mm × 0.25 μ m	60	0.25	0.25	-60 to 325/350
1132-1502	AB-1MS, 15m × 0.32mm × 0.25 μ m	15	0.32	0.25	-60 to 325/350
1132-2505	AB-1MS, 25m × 0.32mm × 0.52 μ m	25	0.32	0.52	-60 to 325/350
1132-3001	AB-1MS, 30m × 0.32mm × 0.10 μ m	30	0.32	0.10	-60 to 325/350
1132-3002	AB-1MS, 30m × 0.32mm × 0.25 μ m	30	0.32	0.25	-60 to 325/350
1132-3010	AB-1MS, 30m × 0.32mm × 1.00 μ m	30	0.32	1.00	-60 to 325/350
1132-6002	AB-1MS, 60m × 0.32mm × 0.25 μ m	60	0.32	0.25	-60 to 325/350

## ■ AB-5

- 5% phenyl, 95% methylpolysiloxane, bonded and crosslinked
- Non-polar, equivalent to USP phase G27
- Solvent rinseable and high temperature limit
- Wide range of column dimensions and stationary phase film thicknesses
- Low column bleed, inert surface with neutral surface and high efficiency
- Most popular for general applications

Similar phases: DB-5, HP-5, Ultra-5, SPB-5, RTX-5, CP-Sil 8CB, BP-5, ZB-5, AT-5, MDN-5, OV-5, SE-52, SE-54

### Order Information:

P/N	Description	Length (m)	ID (mm)	Film (μ m)	Temperature Limit (C)
0518-1001	AB-5, 10m × 0.18mm × 0.18 μ m	10	0.18	0.18	-60 to 325/350
0518-1003	AB-5, 10m × 0.18mm × 0.36 μ m	10	0.18	0.36	-60 to 325/350
0518-1004	AB-5, 10m × 0.18mm × 0.40 μ m	10	0.18	0.40	-60 to 325/350
0518-2001	AB-5, 20m × 0.18mm × 0.18 μ m	20	0.18	0.18	-60 to 325/350
0518-2003	AB-5, 20m × 0.18mm × 0.36 μ m	20	0.18	0.36	-60 to 325/350
0518-2004	AB-5, 20m × 0.18mm × 0.40 μ m	20	0.18	0.40	-60 to 325/350
0518-4001	AB-5, 40m × 0.18mm × 0.18 μ m	40	0.18	0.18	-60 to 325/350
0520-1203	AB-5, 12m × 0.20mm × 0.33 μ m	12	0.20	0.33	-60 to 325/350
0520-1703	AB-5, 17m × 0.20mm × 0.33 μ m	17	0.20	0.33	-60 to 325/350
0520-2501	AB-5, 25m × 0.20mm × 0.11 μ m	25	0.20	0.11	-60 to 325/350

**Order Information:**

P/N	Description	Length (m)	ID (mm)	Film (μ m)	Temperature Limit (C)
0520-2503	AB-5, 25m × 0.20mm × 0.33 μ m	25	0.20	0.33	-60 to 325/350
0520-2505	AB-5, 25m × 0.20mm × 0.50 μ m	25	0.20	0.50	-60 to 325/350
0520-5001	AB-5, 50m × 0.20mm × 0.11 μ m	50	0.20	0.11	-60 to 325/350
0520-5003	AB-5, 50m × 0.20mm × 0.33 μ m	50	0.20	0.33	-60 to 325/350
0520-5005	AB-5, 50m × 0.20mm × 0.50 μ m	50	0.20	0.50	-60 to 325/350
0525-1501	AB-5, 15m × 0.25mm × 0.11 μ m	15	0.25	0.11	-60 to 325/350
0525-1502	AB-5, 15m × 0.25mm × 0.25 μ m	15	0.25	0.25	-60 to 325/350
0525-1505	AB-5, 15m × 0.25mm × 0.50 μ m	15	0.25	0.50	-60 to 325/350
0525-1510	AB-5, 15m × 0.25mm × 1.00 μ m	15	0.25	1.0	-60 to 325/350
0525-3001	AB-5, 30m × 0.25mm × 0.11 μ m	30	0.25	0.11	-60 to 325/350
0525-3002	AB-5, 30m × 0.25mm × 0.25 μ m	30	0.25	0.25	-60 to 325/350
0525-3005	AB-5, 30m × 0.25mm × 0.50 μ m	30	0.25	0.50	-60 to 325/350
0525-3010	AB-5, 30m × 0.25mm × 1.00 μ m	30	0.25	1.00	-60 to 325/350
0525-6001	AB-5, 60m × 0.25mm × 0.11 μ m	60	0.25	0.11	-60 to 325/350
0525-6002	AB-5, 60m × 0.25mm × 0.25 μ m	60	0.25	0.25	-60 to 325/350
0525-6005	AB-5, 60m × 0.25mm × 0.50 μ m	60	0.25	0.50	-60 to 325/350
0525-6010	AB-5, 60m × 0.25mm × 1.00 μ m	60	0.25	1.00	-60 to 325/350
0532-1501	AB-5, 15m × 0.32mm × 0.10 μ m	15	0.32	0.10	-60 to 325/350
0532-1502	AB-5, 15m × 0.32mm × 0.25 μ m	15	0.32	0.25	-60 to 325/350
0532-1505	AB-5, 15m × 0.32mm × 0.50 μ m	15	0.32	0.50	-60 to 325/350
0532-1510	AB-5, 15m × 0.32mm × 1.00 μ m	15	0.32	1.00	-60 to 325/350
0532-2501	AB-5, 25m × 0.32mm × 0.17 μ m	25	0.32	0.17	-60 to 325/350
0532-2505	AB-5, 25m × 0.32mm × 0.52 μ m	25	0.32	0.52	-60 to 325/350
0532-2510	AB-5, 25m × 0.32mm × 1.05 μ m	25	0.32	1.05	-60 to 300/320
0532-3001	AB-5, 30m × 0.32mm × 0.10 μ m	30	0.32	0.10	-60 to 325/350
0532-3002	AB-5, 30m × 0.32mm × 0.25 μ m	30	0.32	0.25	-60 to 325/350
0532-3005	AB-5, 30m × 0.32mm × 0.50 μ m	30	0.32	0.50	-60 to 325/350
0532-3010	AB-5, 30m × 0.32mm × 1.00 μ m	30	0.32	1.00	-60 to 300/320
0532-5001	AB-5, 50m × 0.32mm × 0.17 μ m	50	0.32	0.17	-60 to 325/350
0532-5005	AB-5, 50m × 0.32mm × 0.52 μ m	50	0.32	0.52	-60 to 325/350
0532-5010	AB-5, 50m × 0.32mm × 1.05 μ m	50	0.32	1.05	-60 to 300/320
0532-6001	AB-5, 60m × 0.32mm × 0.17 μ m	60	0.32	0.17	-60 to 325/350
0532-6002	AB-5, 60m × 0.32mm × 0.25 μ m	60	0.32	0.25	-60 to 325/350
0532-6010	AB-5, 60m × 0.32mm × 1.00 μ m	60	0.32	1.00	-60 to 325/350
0553-1026	AB-5, 10m × 0.53mm × 2.65 μ m	10	0.53	2.65	-60 to 260/280
0553-1050	AB-5, 10m × 0.53mm × 5.00 μ m	10	0.53	5.00	-60 to 260/280
0553-1515	AB-5, 15m × 0.53mm × 1.50 μ m	15	0.53	1.50	-60 to 300/320
0553-1530	AB-5, 15m × 0.53mm × 3.00 μ m	15	0.53	3.00	-60 to 260/280
0553-1550	AB-5, 15m × 0.53mm × 5.00 μ m	15	0.53	5.00	-60 to 260/280
0553-3002	AB-5, 30m × 0.53mm × 0.25 μ m	30	0.53	0.25	-60 to 300/320
0553-3008	AB-5, 30m × 0.53mm × 0.88 μ m	30	0.53	0.88	-60 to 300/320
0553-3015	AB-5, 30m × 0.53mm × 1.50 μ m	30	0.53	1.50	-60 to 300/320
0553-3026	AB-5, 30m × 0.53mm × 2.65 μ m	30	0.53	2.65	-60 to 260/280
0553-3030	AB-5, 30m × 0.53mm × 3.00 μ m	30	0.53	3.00	-60 to 260/280
0553-3050	AB-5, 30m × 0.53mm × 5.00 μ m	30	0.53	5.00	-60 to 260/280
0553-6030	AB-5, 60m × 0.53mm × 3.00 μ m	60	0.53	3.00	-60 to 260/280
0553-6050	AB-5, 60m × 0.53mm × 5.00 μ m	60	0.53	5.00	-60 to 260/280

## ■ AB-5MS

- Identical selectivity to AB-5 but with much lower column bleed
- Best surface inertness for wide range of compounds
- Ideal for GC-MS analysis or new method development

Similar phases: HP-5MS, DB-5MS, BPX-5MS, AT-5MS, Rtx-5MS, CP-Sil 8 CB

### Order Information:

P/N	Description	Length (m)	ID (mm)	Film (μm)	Temperature Limit (C)
1518-1001	AB-5MS, 10m × 0.18mm × 0.18 μm	10	0.18	0.18	-60 to 325/350
1518-1003	AB-5MS, 10m × 0.18mm × 0.36 μm	10	0.18	0.36	-60 to 325/350
1518-2001	AB-5MS, 20m × 0.18mm × 0.18 μm	20	0.18	0.18	-60 to 325/350
1518-2003	AB-5MS, 20m × 0.18mm × 0.36 μm	20	0.18	0.36	-60 to 325/350
1518-4001	AB-5MS, 40m × 0.18mm × 0.18 μm	40	0.18	0.18	-60 to 325/350
1520-1203	AB-5MS, 12m × 0.20mm × 0.33 μm	12	0.20	0.33	-60 to 325/350
1520-1703	AB-5MS, 17m × 0.20mm × 0.33 μm	17	0.20	0.33	-60 to 325/350
1520-2503	AB-5MS, 25m × 0.20mm × 0.33 μm	25	0.20	0.33	-60 to 325/350
1520-5003	AB-5MS, 50m × 0.20mm × 0.33 μm	50	0.20	0.33	-60 to 325/350
1525-1501	AB-5MS, 15m × 0.25mm × 0.10 μm	15	0.25	0.10	-60 to 325/350
1525-1502	AB-5MS, 15m × 0.25mm × 0.25 μm	15	0.25	0.25	-60 to 325/350
1525-1505	AB-5MS, 15m × 0.25mm × 0.50 μm	15	0.25	0.50	-60 to 325/350
1525-1510	AB-5MS, 15m × 0.25mm × 1.00 μm	15	0.25	1.00	-60 to 325/350
1525-3001	AB-5MS, 30m × 0.25mm × 0.10 μm	30	0.25	0.10	-60 to 325/350
1525-3002	AB-5MS, 30m × 0.25mm × 0.25 μm	30	0.25	0.25	-60 to 325/350
1525-3005	AB-5MS, 30m × 0.25mm × 0.50 μm	30	0.25	0.50	-60 to 325/350
1525-3010	AB-5MS, 30m × 0.25mm × 1.00 μm	30	0.25	1.00	-60 to 325/350
1525-6001	AB-5MS, 60m × 0.25mm × 0.10 μm	60	0.25	0.10	-60 to 325/350
1525-6002	AB-5MS, 60m × 0.25mm × 0.25 μm	60	0.25	0.25	-60 to 325/350
1525-6005	AB-5MS, 60m × 0.25mm × 0.50 μm	60	0.25	0.50	-60 to 325/350
1525-6010	AB-5MS, 60m × 0.25mm × 1.00 μm	60	0.25	1.00	-60 to 325/350
1532-1501	AB-5MS, 15m × 0.32mm × 0.10 μm	15	0.32	0.10	-60 to 325/350
1532-1502	AB-5MS, 15m × 0.32mm × 0.25 μm	15	0.32	0.25	-60 to 325/350
1532-1505	AB-5MS, 15m × 0.32mm × 0.50 μm	15	0.32	0.50	-60 to 325/350
1532-1510	AB-5MS, 15m × 0.32mm × 1.00 μm	15	0.32	1.00	-60 to 325/350
1532-2505	AB-5MS, 25m × 0.32mm × 0.52 μm	25	0.32	0.52	-60 to 325/350
1532-3001	AB-5MS, 30m × 0.32mm × 0.10 μm	30	0.32	0.10	-60 to 325/350
1532-3002	AB-5MS, 30m × 0.32mm × 0.25 μm	30	0.32	0.25	-60 to 325/350
1532-3005	AB-5MS, 30m × 0.32mm × 0.50 μm	30	0.32	0.50	-60 to 325/350
1532-3010	AB-5MS, 30m × 0.32mm × 1.00 μm	30	0.32	1.00	-60 to 325/350
1532-6001	AB-5MS, 60m × 0.32mm × 0.10 μm	60	0.32	0.10	-60 to 325/350
1532-6002	AB-5MS, 60m × 0.32mm × 0.25 μm	60	0.32	0.25	-60 to 325/350
1532-6005	AB-5MS, 60m × 0.32mm × 0.50 μm	60	0.32	0.50	-60 to 325/350
1532-6010	AB-5MS, 60m × 0.32mm × 1.00 μm	60	0.32	1.00	-60 to 325/350
1553-3005	AB-5MS, 30m × 0.53mm × 0.50 μm	30	0.53	0.50	-60 to 300/320
1553-3008	AB-5MS, 30m × 0.53mm × 0.88 μm	30	0.53	0.88	-60 to 300/320
1553-3015	AB-5MS, 30m × 0.53mm × 1.50 μm	30	0.53	1.50	-60 to 300/320

## ■ AB-35

- Bonded and 35% phenyl backbone 65% dimethylsiloxane phase
  - Equivalent to USP phase G-42
  - Inert to many active compounds
  - Low column bleed to improve detection sensitivity and quantitation
  - Applications: Aroclors, PCBs, amines, pesticides, pharmaceutical molecules.
- Good confirmation of analysis of active compounds on AB-5MS columns

Similar Phases: HP-35MS, DB-35, BPX-35, AT-35, Rtx-35, SPB-35

### Order Information:

P/N	Description	Length (m)	ID (mm)	Film (μ m)	Temperature Limit (C)
3525-1502	AB-35, 15m × 0.25mm × 0.25 μ m	15	0.25	0.25	40 to 300/320
3525-3001	AB-35, 30m × 0.25mm × 0.15 μ m	30	0.25	0.15	40 to 300/320
3525-3002	AB-35, 30m × 0.25mm × 0.25 μ m	30	0.25	0.25	40 to 300/320
3525-3005	AB-35, 30m × 0.25mm × 0.50 μ m	30	0.25	0.50	40 to 300/320
3525-6002	AB-35, 60m × 0.25mm × 0.25 μ m	60	0.25	0.25	40 to 300/320
3525-6005	AB-35, 60m × 0.25mm × 0.50 μ m	60	0.25	0.50	40 to 300/320
3532-1502	AB-35, 15m × 0.32mm × 0.25 μ m	15	0.32	0.25	40 to 300/320
3532-3002	AB-35, 30m × 0.32mm × 0.25 μ m	30	0.32	0.25	40 to 300/320
3532-3005	AB-35, 30m × 0.32mm × 0.50 μ m	30	0.32	0.50	40 to 300/320
3532-6002	AB-35, 60m × 0.32mm × 0.25 μ m	60	0.32	0.25	40 to 300/320
3532-6005	AB-35, 60m × 0.32mm × 0.50 μ m	60	0.32	0.50	40 to 300/320
3553-3005	AB-35, 30m × 0.53mm × 0.50 μ m	30	0.53	0.50	40 to 280/300
3553-3010	AB-35, 30m × 0.53mm × 1.00 μ m	30	0.53	1.00	40 to 280/300
3553-3015	AB-35, 30m × 0.53mm × 1.50 μ m	30	0.53	1.50	40 to 260/280
3553-6005	AB-35, 60m × 0.53mm × 0.50 μ m	60	0.53	0.50	40 to 280/300

## ■ AB-1301

- Bonded and crosslinked 6% Cyanopropyl-phenyl 94% dimethylsiloxane phase
- Equivalent to USP phase G-43, low to mid polarity
- Inert to many active compounds
- Applications: pesticides, herbicides, halogenates. Good confirmation of the analysis of active compounds on AB-5MS columns

Similar Phases: HP-1301, DB-1301, BP-10, Rtx-1301

### Order Information:

P/N	Description	Length (m)	ID (mm)	Film (μm)	Temperature Limit (C)
6025-1502	AB-1301, 15m × 0.25mm × 0.25 μm	15	0.25	0.25	-20 to 280/300
6025-3002	AB-1301, 30m × 0.25mm × 0.25 μm	30	0.25	0.25	-20 to 280/300
6025-3005	AB-1301, 30m × 0.25mm × 0.50 μm	30	0.25	0.25	-20 to 280/300
6025-3010	AB-1301, 30m × 0.25mm × 1.00 μm	30	0.25	1.00	-20 to 280/300
6025-6002	AB-1301, 60m × 0.25mm × 0.25 μm	60	0.25	0.25	-20 to 280/300
6032-1502	AB-1301, 15m × 0.32mm × 0.25 μm	15	0.32	0.25	-20 to 280/300
6032-1505	AB-1301, 15m × 0.32mm × 0.50 μm	15	0.32	0.25	-20 to 280/300
6032-3002	AB-1301, 30m × 0.32mm × 0.25 μm	30	0.32	0.25	-20 to 280/300
6032-3005	AB-1301, 30m × 0.32mm × 0.50 μm	30	0.32	0.50	-20 to 280/300
6032-3010	AB-1301, 30m × 0.32mm × 1.00 μm	30	0.32	1.00	-20 to 280/300
6032-6002	AB-1301, 60m × 0.32mm × 0.25 μm	60	0.32	0.25	-20 to 280/300
6032-6005	AB-1301, 60m × 0.32mm × 0.50 μm	60	0.32	0.50	-20 to 280/300
6053-3005	AB-1301, 30m × 0.53mm × 0.50 μm	30	0.53	0.50	-20 to 260/280
6053-3010	AB-1301, 30m × 0.53mm × 1.00 μm	30	0.53	1.00	-20 to 260/280
6053-3015	AB-1301, 30m × 0.53mm × 1.50 μm	30	0.53	1.50	-20 to 260/280
6053-6005	AB-1301, 60m × 0.53mm × 0.50 μm	60	0.53	0.50	-20 to 260/280

## ■ AB-1701

- Bonded and crosslinked 14% Cyanopropyl-phenyl 86% dimethylsiloxane phase
- Low to mid polarity
- Inert to many active compounds
- Applications: pesticides, herbicides, halogenates. Good confirmation of analysis of active compounds on AB-5MS columns

Similar phases: DB 1701, ZB 1701, BP-10, Rtx-1701, CP-Sil 19 CB

### Order Information:

P/N	Description	Length (m)	ID (mm)	Film (μm)	Temperature Limit (C)
6125-1502	AB-1701, 15m × 0.25mm × 0.25 μm	15	0.25	0.25	-20 to 280/300
6125-3002	AB-1701, 30m × 0.25mm × 0.25 μm	30	0.25	0.25	-20 to 280/300
6125-3005	AB-1701, 30m × 0.25mm × 0.50 μm	30	0.25	0.50	-20 to 280/300
6125-3010	AB-1701, 30m × 0.25mm × 1.00 μm	30	0.25	1.00	-20 to 280/300
6125-6002	AB-1701, 60m × 0.25mm × 0.25 μm	60	0.25	0.25	-20 to 280/300
6125-6005	AB-1701, 60m × 0.25mm × 0.50 μm	60	0.25	0.50	-20 to 280/300
6132-1502	AB-1701, 15m × 0.32mm × 0.25 μm	15	0.32	0.25	-20 to 280/300
6132-1505	AB-1701, 15m × 0.32mm × 0.50 μm	15	0.32	0.50	-20 to 280/300
6132-3002	AB-1701, 30m × 0.32mm × 0.25 μm	30	0.32	0.25	-20 to 280/300
6132-3005	AB-1701, 30m × 0.32mm × 0.50 μm	30	0.32	0.50	-20 to 280/300
6132-3010	AB-1701, 30m × 0.32mm × 1.00 μm	30	0.32	1.00	-20 to 260/280
6132-6002	AB-1701, 60m × 0.32mm × 0.25 μm	60	0.32	0.25	-20 to 280/300
6132-6005	AB-1701, 60m × 0.32mm × 0.50 μm	60	0.32	0.50	-20 to 280/300
6132-6010	AB-1701, 60m × 0.32mm × 1.00 μm	60	0.32	1.00	-20 to 280/300
6153-1505	AB-1701, 15m × 0.53mm × 0.50 μm	15	0.53	0.50	-20 to 260/280
6153-1510	AB-1701, 15m × 0.53mm × 1.00 μm	15	0.53	1.00	-20 to 260/280



**Order Information:**

P/N	Description	Length (m)	ID (mm)	Film (μ m)	Temperature Limit (C)
6153-3002	AB-1701, 60m × 0.53mm × 0.50 μ m	30	0.53	0.25	-20 to 260/280
6153-3005	AB-1701, 60m × 0.53mm × 1.00 μ m	30	0.53	0.50	-20 to 260/280
6153-3010	AB-1701, 30m × 0.53mm × 0.25 μ m	30	0.53	1.00	-20 to 260/280
6153-3015	AB-1701, 30m × 0.53mm × 0.50 μ m	30	0.53	1.50	-20 to 260/280
6153-6005	AB-1701, 30m × 0.53mm × 1.00 μ m	60	0.53	0.50	-20 to 260/280
6153-6010	AB-1701, 30m × 0.53mm × 1.50 μ m	60	0.53	1.00	-20 to 260/280

**■ AB-624**

- Bonded and crosslinked specially designed stationary phase for EPA methods
- Low-Polarity
- Inert to many active compounds
- Applications: EPA methods: 501.3, 502.2, 503.1, 524.2, 601, 602, 8010, 8015, 8020, 8240,8260

Similar phases: DB-624, ZB-624, AT-624, Rtx-624, CP-624

**Order Information:**

P/N	Description	Length (m)	ID (mm)	Film (μ m)	Temperature Limit (C)
6225-3014	AB-624, 30m × 0.25mm × 1.40 μ m	30	0.25	1.40	-20 to 260
6225-6014	AB-624, 60m × 0.25mm × 1.40 μ m	60	0.25	1.40	-20 to 260
6232-3018	AB-624, 30m × 0.32mm × 1.80 μ m	30	0.32	1.80	-20 to 260
6232-6018	AB-624, 60m × 0.32mm × 1.80 μ m	60	0.32	1.80	-20 to 260
6253-3030	AB-624, 30m × 0.53mm × 3.00 μ m	30	0.53	3.00	-20 to 260

**■ AB-225**

- Mid to high polarity
- 50% cyanopropylmethyl, 50% phenylmethylpolysiloxane
- Bonded and crosslinked
- Solvent rinsable
- Wide range of applications including: fatty acid methyl esters (FAME), PUFA, alditol, and neutral sterols
- Temperature range from 40°C to 220°C / 240°C
- Equivalent to USP phase G7

Similar phases:DB-225, SP-2330, CP-Sil 43 CB, Rtx-225, BP-225, OV-225, 007-225, AT-225

**Order Information:**

P/N	Description	Length (m)	ID (mm)	Film (μ m)	Temperature Limit (C)
2525-1502	AB-225, 15m × 0.25mm × 0.25 μ m	15	0.25	0.25	40 to 220/240
2525-1505	AB-225, 15m × 0.25mm × 0.50 μ m	15	0.25	0.50	40 to 220/240
2525-3001	AB-225, 30m × 0.25mm × 0.15 μ m	30	0.25	0.15	40 to 220/240
2525-3002	AB-225, 30m × 0.25mm × 0.25 μ m	30	0.25	0.25	40 to 220/240
2532-3002	AB-225, 30m × 0.32mm × 0.25 μ m	30	0.32	0.25	40 to 220/240
2532-3005	AB-225, 30m × 0.32mm × 0.50 μ m	30	0.32	0.50	40 to 220/240
2553-1505	AB-225, 15m × 0.53mm × 0.50 μ m	15	0.53	0.50	40 to 200/220
2553-1510	AB-225, 15m × 0.53mm × 1.00 μ m	15	0.53	1.00	40 to 200/220
2553-3002	AB-225, 30m × 0.53mm × 0.25 μ m	30	0.53	0.25	40 to 200/220
2553-3005	AB-225, 30m × 0.53mm × 0.50 μ m	30	0.53	0.50	40 to 200/220
2553-3010	AB-225, 30m × 0.53mm × 1.00 μ m	30	0.53	1.00	40 to 200/220



## ■ AB-PONA

- 100% Dimethylpolysiloxane
- For analyzing petroleum process products
- Tested to ensure the resolution of m-xylene and p-xylene of cyclopentane from 2,3-dimethylbutane
- High resolution
- Bonded and cross linked
- Solvent rinseable

Similar Phase: HP PONA, Petrocol DH, SPB-1, 007-1, Rtx-1, MXT-1

### Order Information:

P/N	Description	Length (m)	ID (mm)	Film (μm)	Temperature Limit (°C)
9002-PONA	AB-PONA 50m × 0.20mm × 0.5 μm	50	0.2	0.50	-60 to 325/350
9006-PONA	AB-PONA 100m × 0.25mm × 0.5 μm	100	0.25	0.50	-60 to 325/350

## ■ AB Built-in-Guard Column

AB Built-in-Guard column is combination of a AbelBonded™ column with a built-in Abel made guard column. The first 5-meter or 10-meter is part of the AB Built-in-Guard column. The guard column is just deactivated with no coated stationary phase. The single continuous piece avoids the problems of installation hassles, peak shape problems, and leaks associated with unions. Difficult samples, such as pesticides or drugs, can be analyzed without any undesirable contributions from the unions.

Similar Phase: Dura\_Guard Column, EZ-Guard Column

### Order Information:

P/N	Description	Length, Guard Column	Temperature Limit (°C)
1118-2001-G5	AB-1MS Built-in-Guard 20m × 0.18mm × 0.18 μm	5m	-60 to 325/350
1125-3002-G5	AB-1MS Built-in-Guard 30m × 0.25mm × 0.25 μm	5m	-60 to 325/350
1125-3002-G10	AB-1MS Built-in-Guard 30m × 0.25mm × 0.25 μm	10m	-60 to 325/350
1125-3005-G5	AB-1MS Built-in-Guard 30m × 0.25mm × 0.50 μm	5m	-60 to 325/350
1125-6002-G5	AB-1MS Built-in-Guard 60m × 0.25mm × 0.25 μm	5m	-60 to 325/350
1132-3002-G5	AB-1MS Built-in-Guard 30m × 0.32mm × 0.25 μm	5m	-60 to 325/350
1132-3005-G5	AB-1MS Built-in-Guard 30m × 0.32mm × 0.50 μm	5m	-60 to 325/350
1518-2001-G5	AB-5MS Built-in-Guard 20m × 0.18mm × 0.18 μm	5m	-60 to 325/350
1525-3002-G5	AB-5MS Built-in-Guard 30m × 0.25mm × 0.25 μm	5m	-60 to 325/350
1525-3002-G10	AB-5MS Built-in-Guard 30m × 0.25mm × 0.25 μm	10m	-60 to 325/350
1525-3005-G5	AB-5MS Built-in-Guard 30m × 0.25mm × 0.50 μm	5m	-60 to 325/350
1525-6002-G5	AB-5MS Built-in-Guard 60m × 0.25mm × 0.25 μm	5m	-60 to 325/350
1532-3002-G5	AB-5MS Built-in-Guard 30m × 0.32mm × 0.25 μm	5m	-60 to 325/350
1532-3005-G5	AB-5MS Built-in-Guard 30m × 0.32mm × 0.50 μm	5m	-60 to 325/350



## Polyethylene Glycol (PEG) Phases

Abel offers three types of PEG columns: AB-INOWAX, AB-FFAP and AB-CarboWax 20M, based on the characteristics of the PEG stationary phases, for various applications.

### ■ AB-INOWAX

- Bonded and crosslinked Polyethylene glycol (PEG)
- Solvent rinseable
- Highest temperature limits of bonded PEG phases
- Polar phase, equivalent to USP phase G16
- Wide applications of polar solvent analysis in food, pharma, cosmetics, petrochemical industries

Similar Phases: HP-INNOWax, DB-WAX, DB-WAXetr, SupelcoWAX 10, CP-WAX 52 CB, CB-WAX, Stabililwax, BP-20, 007-CW, AT-Wax, Rtx-Wax, ZB-Wax, HP-20M

### Order Information:

P/N	Description	Length (m)	ID (mm)	Film (μm)	Temperature Limit (C)
2018-1001	AB-INOWAX, 10m × 0.18mm × 0.18 μm	10	0.18	0.18	40 to 260/280
2018-2001	AB-INOWAX, 20m × 0.18mm × 0.18 μm	20	0.18	0.18	40 to 260/280
2018-4001	AB-INOWAX, 40m × 0.18mm × 0.18 μm	40	0.18	0.18	40 to 260/280
2018-4003	AB-INOWAX, 40m × 0.18mm × 0.36 μm	40	0.18	0.36	40 to 260/280
2020-2502	AB-INOWAX, 25m × 0.20mm × 0.20 μm	25	0.20	0.20	40 to 260/280
2020-2504	AB-INOWAX, 25m × 0.20mm × 0.40 μm	25	0.20	0.40	40 to 260/280
2020-5002	AB-INOWAX, 50m × 0.20mm × 0.20 μm	50	0.20	0.20	40 to 260/280
2020-5004	AB-INOWAX, 50m × 0.20mm × 0.40 μm	50	0.20	0.40	40 to 260/280
2025-1502	AB-INOWAX, 15m × 0.25mm × 0.25 μm	15	0.25	0.25	40 to 260/280
2025-1505	AB-INOWAX, 15m × 0.25mm × 0.50 μm	15	0.25	0.50	40 to 260/280
2025-3001	AB-INOWAX, 30m × 0.25mm × 0.15 μm	30	0.25	0.15	40 to 260/280
2025-3002	AB-INOWAX, 30m × 0.25mm × 0.25 μm	30	0.25	0.25	40 to 260/280
2025-3005	AB-INOWAX, 30m × 0.25mm × 0.50 μm	30	0.25	0.50	40 to 260/280
2025-6001	AB-INOWAX, 60m × 0.25mm × 0.15 μm	60	0.25	0.15	40 to 260/280
2025-6002	AB-INOWAX, 60m × 0.25mm × 0.25 μm	60	0.25	0.25	40 to 260/280
2025-6005	AB-INOWAX, 60m × 0.25mm × 0.50 μm	60	0.25	0.50	40 to 260/280
2032-1502	AB-INOWAX, 15m × 0.32mm × 0.25 μm	15	0.32	0.25	40 to 260/280
2032-1505	AB-INOWAX, 15m × 0.32mm × 0.50 μm	15	0.32	0.50	40 to 260/280
2032-3001	AB-INOWAX, 30m × 0.32mm × 0.15 μm	30	0.32	0.15	40 to 260/280
2032-3002	AB-INOWAX, 30m × 0.32mm × 0.25 μm	30	0.32	0.25	40 to 260/280
2032-3005	AB-INOWAX, 30m × 0.32mm × 0.50 μm	30	0.32	0.50	40 to 260/280
2032-6001	AB-INOWAX, 60m × 0.32mm × 0.15 μm	60	0.32	0.15	40 to 260/280
2032-6002	AB-INOWAX, 60m × 0.32mm × 0.25 μm	60	0.32	0.25	40 to 260/280
2032-6005	AB-INOWAX, 60m × 0.32mm × 0.50 μm	60	0.32	0.50	40 to 260/280
2053-1510	AB-INOWAX, 15m × 0.53mm × 1.00 μm	15	0.53	1.00	40 to 240/250
2053-3010	AB-INOWAX, 30m × 0.53mm × 1.00 μm	30	0.53	1.00	40 to 240/250
2053-6010	AB-INOWAX, 60m × 0.53mm × 1.00 μm	60	0.53	1.00	40 to 240/250

## ■ AB-FFAP

- Nitroterephthalic acid modified Polyethylene glycol (PEG)
- Bonded and crosslinked
- Non-alcohol/aqueous solvent rinseable
- High temperature limit
- Polar phase, equivalent to USP phase G35
- Designed for the analysis of volatile fatty acids and phenols

Similar Phases: HP-FFAP, DB-FFAP, CB-WAX 58 (FFAP) CB, Stabilwax-DA, BP-21, 007-CW, AT-100

### Order Information:

P/N	Description	Length (m)	ID (mm)	Film (μm)	Temperature Limit (C)
2118-2001	AB-FFAP, 20m × 0.18mm × 0.18 μm	20	0.18	0.18	50 to 260
2120-2503	AB-FFAP, 25m × 0.20mm × 0.30 μm	25	0.20	0.30	50 to 260
2120-5003	AB-FFAP, 50m × 0.20mm × 0.30 μm	50	0.20	0.30	50 to 260
2125-1502	AB-FFAP, 15m × 0.25mm × 0.25 μm	15	0.25	0.25	50 to 260
2125-3002	AB-FFAP, 30m × 0.25mm × 0.25 μm	30	0.25	0.25	50 to 260
2132-1502	AB-FFAP, 15m × 0.32mm × 0.25 μm	15	0.32	0.25	50 to 260
2132-2505	AB-FFAP, 25m × 0.32mm × 0.50 μm	25	0.32	0.50	50 to 260
2132-3002	AB-FFAP, 30m × 0.32mm × 0.25 μm	30	0.32	0.25	50 to 260
2132-3005	AB-FFAP, 30m × 0.32mm × 0.50 μm	30	0.32	0.50	50 to 260
2132-5005	AB-FFAP, 50m × 0.32mm × 0.50 μm	50	0.32	0.50	50 to 260
2153-1010	AB-FFAP, 10m × 0.53mm × 1.00 μm	10	0.53	1.00	50 to 250
2153-1510	AB-FFAP, 15m × 0.53mm × 1.00 μm	15	0.53	1.00	50 to 250
2153-3010	AB-FFAP, 30m × 0.53mm × 1.00 μm	30	0.53	1.00	50 to 250

## ■ AB-CarboWax 20M

- Polyethylene glycol (PEG), MW 20,000
- Non-Bonded non-crosslinked phase
- Polar phase, equivalent to USP phase G16
- Replacement of packed columns with Carbowax 20M modified

### Order Information:

P/N	Description	Length (m)	ID (mm)	Film (μm)	Temperature Limit (C)
2220-2501	AB-CarBoWax 20M, 25m x 0.20mm x 0.10 μm	25	0.20	0.10	60 to 220
2220-5001	AB-CarBoWax 20M, 50m x 0.20mm x 0.10 μm	50	0.20	0.10	60 to 220
2225-3002	AB-CarBoWax 20M, 30m x 0.25mm x 0.25 μm	30	0.25	0.25	60 to 220
2232-2503	AB-CarBoWax 20M, 25m x 0.32mm x 0.30 μm	25	0.32	0.30	60 to 220
2232-5003	AB-CarBoWax 20M, 50m x 0.32mm x 0.30 μm	50	0.32	0.30	60 to 220
2253-1013	AB-CarBoWax 20M, 10m x 0.53mm x 1.33 μm	10	0.53	1.33	60 to 210
2253-3013	AB-CarBoWax 20M, 30m x 0.53mm x 1.33 μm	30	0.53	1.33	60 to 210

## AB-PLOT Columns

Abel offers four types of PLOT columns, AB-PLOT Al<sub>2</sub>O<sub>3</sub>, AB-PLOT Molesieve, and AB-PLOT Q and U, for various applications in petrochemical, environment, and pharmaceutical industries.

- Porous Layer Open Tubular (PLOT) formed by various particle absorbents
- Truly immobilized particle coating onto capillary tubing wall, no need of using trap column
- Very high specific surface areas to provide high capacities needed for separations
- Different “Polarities” (column selectivity) to tail specific separations
- Ideal columns for separating volatile and gaseous compounds
- Replacement of packed columns

### How to Choose an AB-PLOT Column

General property	AB-PLOT Al <sub>2</sub> O <sub>3</sub> / “KCL” “S” “M”	AB-PLOT MoleSieves 5A	AB-PLOT Q	AB-PLOT U
<b>Stationary phase</b>	Aluminum oxide, modified with KCL, Na <sub>2</sub> SO <sub>4</sub> or Na <sub>2</sub> MoO <sub>4</sub>	Molecular Sieve, zeolite, 5A	Crosslinked Divinylbenzene polymer	Crosslinked divinylbenzene ethylene glycol dimethacrylate copolymer
<b>Withstand water</b>	No	No	Good to excellent	Excellent
<b>Withstand acid/base</b>	No	No/Yes	Excellent	Excellent
<b>Withstand non-aqueous liquid</b>	Yes	No	Yes	Yes
<b>Thermal stability</b>	200°C	300°C	280°C	190°C
<b>Rinseable w/ solvent</b>	No	Yes, w/ water	Yes	Yes
<b>Fix gas separation at ambient temperature</b>	No	Yes	Air/CO, CO <sub>2</sub> , Water, sulfur gases, ammonia	Air/CO, CO <sub>2</sub> , water, sulfur gases, ammonia
<b>C1 to C5 separation</b>	Excellent baseline	No (C1 and C2)	Most, poor isomer baseline separation	Most, poor isomer baseline separation
<b>Hydrocarbons</b>	C1 to C6 (C10 for short columns)	C1, C2	C1 to C12	C1 to C10
<b>Separation of polar / oxygenated compound</b>	Minimal	No	Good to excellent	Good to excellent
<b>Known surface adsorption</b>	Oxygenates, acid/base, CO <sub>2</sub> , Water	CO <sub>2</sub> , Water, Acid/base, hydrocarbons and halocarbons	Modest sulfur gases adsorption	Less adsorption of sulfur gases
<b>Elution order</b>	Air, C1, Mostly carbon No. and aromatics	He/H <sub>2</sub> /Ne/Ar/O <sub>2</sub> /N <sub>2</sub> /C1/CO	Air, C1, C2, CO <sub>2</sub> , water Mostly carbon No. or polarity and aromatics	Air, C1, C2, CO <sub>2</sub> , C3, water. Mostly carbon No. or polarity and aromatics
<b>Known Applications</b>	Hydrocarbons, halocarbons, some chemical weapon gases (cyanous gases), BTEX	Fixed gases and fixed gases from hydrocarbon stream, hydrogen isotopes at - 80°C	Hydrocarbon stream, oxygenated compounds, inorganic gases, halocarbons	Hydrocarbon stream, oxygenated compounds, inorganic gases
<b>Similar Phases</b>	HP-PLOT Al <sub>2</sub> O <sub>3</sub> “KCL”, “S”, “M”, CP-Al <sub>2</sub> O <sub>3</sub> PLOT KCL, Na <sub>2</sub> SO <sub>4</sub> , GS-Alumina, Rt-Alumina ZB-Alumina	HP-PLOT Molesieve, CP-Molsieve PLOT, Rt-Molesieve, ZB-Molesieve	HP-PLOT Q, GS-Q, CP PoraPLOT Q, CP PoraPLOT Q HT, Rt-Q, Supel Q PLOT ZB-PLOT Q	HP-PLOT U, CP PoraPLOT U

## ■ Common Practices of Using PLOT Columns:

- Avoid using column at over temperature limit, as it changes column selectivity
- Avoid direct aqueous sample introduction to Alumina, Molesieve PLOT columns
- Avoid direct dirty sample introduction to PLOT columns, as performance regeneration takes long time. Use back-flushing as much as possible
- Performance regeneration takes long time, 10 — 24hours at column high temperature limit
- Avoid rinsing column to regenerate column performance. Instead, using temperature condition as much as possible
- Seal column ends with new septum when it is stored outside GC oven
- Cut column gently and neatly to avoid particle dislodging
- Do NOT tap or vibrate column, avoid too much tubing bending, as these will destroy coating binding and generate particulates to cause detector blockage or baseline spike
- Use helium as carrier gas if possible. When hydrogen gas is used as carrier, avoid too much high temperature instrumentation
- Keep column at 100-150°C when idling inside GC oven, maintain column gas flow
- For GC equipped with EPC, use slow pressure ramping for constant flow mode. Avoid pressure pulse injection
- PLOT column can be very fragile as it was prepared under great stresses. Use it with great care.
- PLOT column can be used in GC-MS instrument with great care to avoid particle dislodging. In case the particle invade into the ion source, clean the ion source as soon as possible to avoid particle moving into detector or turbo pump
- Use shorter length column at first. Use 50/60m column if retention needs to be increased
- Use 0.53mm ID column for large sample loading capacity. Use 0.32mm column for improving baseline separation or GC-MS application
- Elution order of working compounds has not been known completely. Try common sense, your own knowledge, literature, expert consultation, and other resources to identify peak. Use internal standards or GC-MS as aid for peak identification
- There is NO totally “inert” PLOT column. Quantify your analysis result with care. Calibrate the result time by time as the column performance may be decreased over time
- Bare spots over column length are normal for PLOT columns. It does NOT affect column efficiency, retention time and coating immobilization

## ■ AB-PLOT Al<sub>2</sub>O<sub>3</sub> “KCI”

- Least selective Olefins (“polar”) aluminum oxide phase
- Deactivated with KCl
- Good baseline separation of most C1 to C10 hydrocarbons
- Olefins may co-elute with corresponding paraffin over C5
- Minimum surface adsorption of dienes and halocarbons
- ASTM recommended phase
- Preferred choice of hydrocarbon separation

Replacement: HP-PLOT Al<sub>2</sub>O<sub>3</sub>/KCL, GS-Alumina/KCL, CP-Al<sub>2</sub>O<sub>3</sub>/KCl PLOT, ZB-Alumina/KCl

### Order Information:

P/N	Description	Length (m)	ID (mm)	Film (μm)	Temperature Limit (C)
8125-2505	AB-PLOT Al <sub>2</sub> O <sub>3</sub> “KCI”, 25m x 0.25mm x 5.00 μm	25	0.25	5	-60 to 200/250
8125-3005	AB-PLOT Al <sub>2</sub> O <sub>3</sub> “KCI”, 30m x 0.25mm x 5.00 μm	30	0.25	5	-60 to 200/250
8132-1508	AB-PLOT Al <sub>2</sub> O <sub>3</sub> “KCI”, 15m x 0.32mm x 8.00 μm	15	0.32	8	-60 to 200/250
8132-3008	AB-PLOT Al <sub>2</sub> O <sub>3</sub> “KCI”, 30m x 0.32mm x 8.00 μm	30	0.32	8	-60 to 200
8132-5008	AB-PLOT Al <sub>2</sub> O <sub>3</sub> “KCI”, 50m x 0.32mm x 8.00 μm	50	0.32	8	-60 to 200
8153-1515	AB-PLOT Al <sub>2</sub> O <sub>3</sub> “KCI”, 15m x 0.53mm x 15.0 μm	15	0.53	15	-60 to 200/250
8153-3015	AB-PLOT Al <sub>2</sub> O <sub>3</sub> “KCI”, 30m x 0.53mm x 15.0 μm	30	0.53	15	-60 to 200
8153-5015	AB-PLOT Al <sub>2</sub> O <sub>3</sub> “KCI”, 50m x 0.53mm x 15.0 μm	50	0.53	15	-60 to 200
8153-6015	AB-PLOT Al <sub>2</sub> O <sub>3</sub> “KCI”, 60m x 0.53mm x 15.0 μm	60	0.53	15	-60 to 200

**Advice** 250C for duration < 30min each time.

### ■ AB-PLOT Al<sub>2</sub>O<sub>3</sub> “S”

- Good selective Olefins (mid “polar”) aluminum oxide phase
- Deactivated with Na<sub>2</sub>SO<sub>4</sub> salt
- Excellent baseline separation of C1 to C10 hydrocarbons, excellent of C3, C4 isomer baseline separations
- Less accurate quantitations of dienes and halocarbons
- ASTM recommended phase
- Preferred choice of hydrocarbon separation

Replacement: HP-PLOT Al<sub>2</sub>O<sub>3</sub>/” S”, GS-Alumina, CP-Al<sub>2</sub>O<sub>3</sub>/Na<sub>2</sub>SO<sub>4</sub> PLOT, ZB-Alumina, RT-Alumina

#### Order Information:

P/N	Description	Length (m)	ID (mm)	Film (μ m)	Temperature Limit (C)
8225-2505	AB-PLOT Al <sub>2</sub> O <sub>3</sub> “S”, 25m x 0.25mm x 5.00 μ m	25	0.25	5	-60 to 200/250
8225-3005	AB-PLOT Al <sub>2</sub> O <sub>3</sub> “S”, 30m x 0.25mm x 5.00 μ m	30	0.25	5	-60 to 200/250
8232-1508	AB-PLOT Al <sub>2</sub> O <sub>3</sub> “S”, 15m x 0.32mm x 8.00 μ m	15	0.32	8	-60 to 200/250
8232-3008	AB-PLOT Al <sub>2</sub> O <sub>3</sub> “S”, 30m x 0.32mm x 8.00 μ m	30	0.32	8	-60 to 200
8232-5008	AB-PLOT Al <sub>2</sub> O <sub>3</sub> “S”, 50m x 0.32mm x 8.00 μ m	50	0.32	8	-60 to 200
8253-1515	AB-PLOT Al <sub>2</sub> O <sub>3</sub> “S”, 15m x 0.53mm x 15.0 μ m	15	0.53	15	-60 to 200/250
8253-3015	AB-PLOT Al <sub>2</sub> O <sub>3</sub> “S”, 30m x 0.53mm x 15.0 μ m	30	0.53	15	-60 to 200
8253-5015	AB-PLOT Al <sub>2</sub> O <sub>3</sub> “S”, 50m x 0.53mm x 15.0 μ m	50	0.53	15	-60 to 200
8253-6015	AB-PLOT Al <sub>2</sub> O <sub>3</sub> “S”, 60m x 0.53mm x 15.0 μ m	60	0.53	15	-60 to 200

**Advice** 250C for duration < 30min each time.

### ■ AB-PLOT Al<sub>2</sub>O<sub>3</sub> “M”

- Strong selective Olefins (most “polar”) aluminum oxide phase
- Deactivated with Na<sub>2</sub>MoO<sub>4</sub> salt
- Mostly baseline separation of C1 to C10 hydrocarbons, good baseline separation of cyclopropane from propylene
- Accurate quantitations of dienes and halocarbons
- ASTM recommended phase
- Preferred choice of hydrocarbon separation

Replacement: HP-PLOT Al<sub>2</sub>O<sub>3</sub>/” M”, GS-Alumina, ZB-Alumina

#### Order Information:

P/N	Description	Length (m)	ID (mm)	Film (μ m)	Temperature Limit (C)
8325-2505	AB-PLOT Al <sub>2</sub> O <sub>3</sub> “M”, 25m x 0.25mm x 5.00 μ m	25	0.25	5	-60 to 200/250
8325-3005	AB-PLOT Al <sub>2</sub> O <sub>3</sub> “M”, 30m x 0.25mm x 5.00 μ m	30	0.25	5	-60 to 200/250
8332-1508	AB-PLOT Al <sub>2</sub> O <sub>3</sub> “M”, 15m x 0.32mm x 8.00 μ m	15	0.32	8	-60 to 200/250
8332-3008	AB-PLOT Al <sub>2</sub> O <sub>3</sub> “M”, 30m x 0.32mm x 8.00 μ m	30	0.32	8	-60 to 200
8332-5008	AB-PLOT Al <sub>2</sub> O <sub>3</sub> “M”, 50m x 0.32mm x 8.00 μ m	50	0.32	8	-60 to 200
8353-1515	AB-PLOT Al <sub>2</sub> O <sub>3</sub> “M”, 15m x 0.53mm x 15.0 μ m	15	0.53	15	-60 to 200/250
8353-3015	AB-PLOT Al <sub>2</sub> O <sub>3</sub> “M”, 30m x 0.53mm x 15.0 μ m	30	0.53	15	-60 to 200
8353-5015	AB-PLOT Al <sub>2</sub> O <sub>3</sub> “M”, 50m x 0.53mm x 15.0 μ m	50	0.53	15	-60 to 200
8353-6015	AB-PLOT Al <sub>2</sub> O <sub>3</sub> “M”, 60m x 0.53mm x 15.0 μ m	60	0.53	15	-60 to 200

**Advice** 250C for duration < 30min each time.

## ■ AB-PLOT MoleSieve

- Molecular Sieve, Zeolite, 5A
- Thin and thick coatings for push limit separations, e.g. Ar/O<sub>2</sub> separation at 35C, O<sub>2</sub>/N<sub>2</sub> with 15sec
- Truly immobilized coating and smooth baseline workable for valve switching
- Preferred column to analyze fixed gases from hydrocarbon streams
- Elution order, H<sub>2</sub>, He, Ne, O<sub>2</sub>, N<sub>2</sub>, CH<sub>4</sub>, CO
- Regeneration of performance from water/CO<sub>2</sub> adsorptions at 250C for 3hr
- ASTM recommended phase
- Noble gas, air from methane, fuel cell, etc
- Often used with other PLOT columns for fixed gas separation from sample matrix

Replacement: HP-PLOT Molesieve, CP-PLOT MolSieve.

### Order Information:

P/N	Description	Length (m)	ID (mm)	Film (μm)	Temperature Limit (C)
8432-0512	AB-PLOT MoleSieve, 5m x 0.32mm x 12.0 μm	5	0.32	12	-80 to 300
8432-1512	AB-PLOT MoleSieve, 15m x 0.32mm x 12.0 μm	15	0.32	12	-80 to 300
8432-3012	AB-PLOT MoleSieve, 30m x 0.32mm x 12.0 μm	30	0.32	12	-80 to 300
8432-1525	AB-PLOT MoleSieve, 15m x 0.32mm x 25.0 μm	15	0.32	25	-80 to 300
8432-3025	AB-PLOT MoleSieve, 30m x 0.32mm x 25.0 μm	30	0.32	25	-80 to 300
8432-5025	AB-PLOT MoleSieve, 50m x 0.32mm x 25.0 μm	50	0.32	25	-80 to 300
8453-6025	AB-PLOT MoleSieve, 60m x 0.32mm x 25.0 μm	60	0.53	25	-80 to 300
8453-0525	AB-PLOT MoleSieve, 5m x 0.53mm x 25.0 μm	5	0.53	25	-80 to 300
8453-1525	AB-PLOT MoleSieve, 15m x 0.53mm x 25.0 μm	15	0.53	25	-80 to 300
8453-3025	AB-PLOT MoleSieve, 30m x 0.53mm x 25.0 μm	30	0.53	25	-80 to 300
8453-1550	AB-PLOT MoleSieve, 15m x 0.53mm x 50.0 μm	15	0.53	50	-80 to 300
8453-3050	AB-PLOT MoleSieve, 30m x 0.53mm x 50.0 μm	30	0.53	50	-80 to 300
8453-5050	AB-PLOT MoleSieve, 50m x 0.53mm x 50.0 μm	50	0.53	50	-80 to 300
8453-6050	AB-PLOT MoleSieve, 60m x 0.53mm x 50.0 μm	60	0.53	50	-80 to 300

## ■ AB-PLOT Q

- Divinylbenzene polymer particle, nonpolar, close to traditional PoraPak Q
- Truly immobilized coating and smooth baseline workable for valve switching and liquid sample introduction at low temperatures
- Highest temperature limit, upto 280/300°C
- Baseline separation of Air, CO<sub>2</sub>, water, sulfur gases, hydrogen chlorine, ammonia/light amines from hydrocarbons such as refinery stream, natural gas, and engine exhaust
- Excellent separation of C<sub>1</sub> to C<sub>3</sub> isomers, good separations of C<sub>3</sub> to C<sub>12</sub>, halocarbons
- Excellent inertness and stability of water/alcohol sample, a good secondary choice of wax column for alcohol analysis
- Excellent tolerance to strong acid/base sample without affecting retention time
- Good anti-oxidation at 280°C and fast regeneration of performance
- Observed slight sulfur gas, hydrogen chlorine, and amine absorption
- Water peak is tailing, but no effect on retention
- Good choice for analyzing low level solvent residues from wide samples, such as headspace, aqueous, or organic solutions
- Preferred column for residue analysis in petroleum industry, pharmaceutical, environmental, chemical weapon detection
- Preferred column to analyze polar compounds including oxygenates from hydrocarbon streams: natural gas, refinery gas, dienes, ethylene, propylene



Replacement: HP-PLOT Q, GS-Q, CP-PoraPLOT Q HT, Supel PLOT Q, Rt-Q, ZB-PLOT Q

**Order Information:**

P/N	Description	Length (m)	ID (mm)	Film (μm)	Temperature Limit (C)
8632-1515	AB-PLOT Q, 15m x 0.32mm x 15.0 μm	15	0.32	15	-80 to 280/290
8632-3015	AB-PLOT Q, 30m x 0.32mm x 15.0 μm	30	0.32	15	-80 to 280/290
8653-1530	AB-PLOT Q, 15m x 0.53mm x 30.0 μm	15	0.53	30	-80 to 280/290
8653-3030	AB-PLOT Q, 30m x 0.53mm x 30.0 μm	30	0.53	30	-80 to 280/290
8653-6030	AB-PLOT Q, 60m x 0.53mm x 30.0 μm	60	0.53	30	-80 to 260/280

**■ AB-PLOT U**

- Divinylbenzene and Ethylene glycol dimethacrylate copolymer particle, polar, close to traditional PoraPack U
- Truly immobilized coating and smooth baseline workable for valve switching and liquid sample introduction at low temperatures
- Improved separation and selectivity of Air, CO<sub>2</sub>, water, sulfur gases, hydrogen chloride, ammonia/light amines from hydrocarbons
- Symmetric water peak shape, water elute after C<sub>3</sub>
- Excellent separation of C<sub>1</sub> to C<sub>3</sub> isomers, good separations of C<sub>3</sub> to C<sub>12</sub>, halocarbons
- Excellent inertness and stability of water/alcohol sample, a good secondary choice of wax column for alcohol analysis
- Excellent tolerance to strong acid/base sample without affecting retention time
- Observed slight sulfur gas, hydrogen chloride, and amine absorption
- Good choice for analyzing low level solvent residues from wide samples, such as headspace, aqueous, or organic solutions
- Preferred column for residue analysis in petroleum industry, pharmaceutical, environmental, chemical weapon detection
- Preferred column to analyze polar compounds including oxygenates from hydrocarbon streams: natural gas, refinery gas, dienes, ethylene, propylene

Replacement: HP-PLOT U, CP-PoraPLOT U

**Order Information:**

P/N	Description	Length (m)	ID (mm)	Film (μm)	Temperature Limit (C)
8732-1510	AB-PLOT U, 15m x 0.32mm x 10.0 μm	15	0.32	10	-80 to 190/200
8732-3010	AB-PLOT U, 30m x 0.32mm x 10.0 μm	30	0.32	10	-80 to 190
8732-3020	AB-PLOT U, 30m x 0.32mm x 20.0 μm	30	0.32	20	-80 to 190
8753-1520	AB-PLOT U, 15m x 0.53mm x 20.0 μm	15	0.53	20	-80 to 190/200
8753-3020	AB-PLOT U, 30m x 0.53mm x 20.0 μm	30	0.53	20	-80 to 190



## Fused Silica Tubing

### ■ Undeactivated Tubing

Bare fused silica tubing are commonly used as sample transfer line where inertness is not required. It can also be used as raw tubing for preparation of customized column. All bare fused silica tubing is offered as pre-wrapped onto a 6 inch diameter cage.

#### Order Information:

P/N	Description	Length(m)	ID(mm)	OD (mm)
9020-0500	Undeactivated Tubing, 5m, ID 0.2mm, OD 0.34mm	5	0.2	0.34
9020-1000	Undeactivated Tubing, 10m, ID 0.2mm, OD 0.34mm	10	0.2	0.34
9020-1500	Undeactivated Tubing, 15m, ID 0.2mm, OD 0.34mm	15	0.2	0.34
9025-0500	Undeactivated Tubing, 5m, ID 0.25mm, OD 0.35mm	5	0.25	0.35
9025-1000	Undeactivated Tubing, 10m, ID 0.25mm, OD 0.35mm	10	0.25	0.35
9025-1500	Undeactivated Tubing, 15m, ID 0.25mm, OD 0.35mm	15	0.25	0.35
9032-0500	Undeactivated Tubing, 5m, ID 0.32mm, OD 0.43mm	5	0.32	0.43
9032-1000	Undeactivated Tubing, 10m, ID 0.32mm, OD 0.43mm	10	0.32	0.43
9032-1500	Undeactivated Tubing, 15m, ID 0.32mm, OD 0.43mm	15	0.32	0.43
9053-0500	Undeactivated Tubing, 5m, ID 0.53mm, OD 0.67mm	5	0.53	0.67
9053-1000	Undeactivated Tubing, 10m, ID 0.53mm, OD 0.67mm	10	0.53	0.67
9053-1500	Undeactivated Tubing, 5m, ID 0.53mm, OD 0.67mm	15	0.53	0.67

### ■ Deactivated Tubing

Deactivated fused silica tubing is commonly used as retention gap and guard column or sample transfer line. They can prolong analytical column life, as they trap most “dirty” or undesired compounds. Our standard deactivation method is methyl siloxane deactivation. We also can offer other deactivation methods upon requesting. All deactivated fused silica tubing is offered as pre-wrapped onto a 6 inch diameter cage.

#### Order Information:

P/N	Description	Length(m)	ID(mm)	OD (mm)
9120-0100	Deactivated Tubing, 1m, ID 0.2mm, OD 0.34mm	1	0.2	0.34
9120-0500	Deactivated Tubing, 5m, ID 0.2mm, OD 0.34mm	5	0.2	0.34
9120-1000	Deactivated Tubing, 10m, ID 0.2mm, OD 0.34mm	10	0.2	0.34
9125-0100	Deactivated Tubing, 1m, ID 0.25mm, OD 0.35mm	1	0.25	0.35
9125-0500	Deactivated Tubing, 5m, ID 0.25mm, OD 0.35mm	5	0.25	0.35
9125-1000	Deactivated Tubing, 10m, ID 0.25mm, OD 0.35mm	10	0.25	0.35
9132-0100	Deactivated Tubing, 1m, ID 0.32mm, OD 0.43mm	1	0.32	0.43
9132-0500	Deactivated Tubing, 5m, ID 0.32mm, OD 0.43mm	5	0.32	0.43
9132-1000	Deactivated Tubing, 10m, ID 0.32mm, OD 0.43mm	10	0.32	0.43
9153-0100	Deactivated Tubing, 1m, ID 0.53mm, OD 0.67mm	1	0.53	0.67
9153-0500	Deactivated Tubing, 5m, ID 0.53mm, OD 0.67mm	5	0.53	0.67
9153-1000	Deactivated Tubing, 10m, ID 0.53mm, OD 0.67mm	10	0.53	0.67