



Solvent Retention Data for DB-624, DB-1, and DB-WAX Columns

Data Sheet

Sorted Alphabetically and by Retention Time

Agilent DB-624, DB-1 and DB-WAX are excellent choices for a wide variety of residual solvent and solvent purity methods.

- Rigorous quality control specifications for retention, efficiency, and selectivity
- Large selection of column dimensions for your every application need
- Quality and reliability you can trust

DB-624 - Alphabetical		Compound	Retention time
Column:	DB-624	Benzyl acetate	21.07
	30 m x 0.53 mm id, 3 µm	Benzyl alcohol	19.27
P/N:	125-1334	Benzyl ether	29.08
Oven:	40 °C for 5 min	Bromobenzene	16.39
	40–260 °C at 10 °/min	Bromochloromethane	7.59
	260 °C for 3 min	Bromodichloromethane	10.64
Carrier:	Helium	Bromoethane	4.27
	at 30 cm/s (40 °C)	Bromoform	15.61
Injector:	Split 1:10, 250 °C	1,3-Butanediol	16.10
Detector:	FID, 300 °C	1,4-Butanediol	17.70
		2,3-Butanediol	14.14
		2,3-Butanedione (Diacetal)	6.99
		1-Butanol	9.73
		2-Butanone (MEK)	7.19
		2-Buten-1-ol (Crotyl alcohol)	9.87
		3-Buten-1-ol	9.02
		2-Butoxyethanol (Butyl cellosolve)	15.89
		Butyl acetate	13.24
		Butylbenzene	18.69
		Butyl ether	14.41
		Butyl ethyl ether	9.34
		Butyl methyl ether	7.10
		Butyraldehyde	6.84
		Carbon disulfide	4.27
		Carbon tetrachloride	8.34
		Chlorobenzene	14.25
		1-Chlorobutane	8.25
		Chlorodibromomethane	13.25
		Chloroform	7.75
		1-Chlorohexane	14.21
Compound	Retention time		
Acetal (Acetaldehyde diethyl acetal)	10.58		
Acetaldehyde	2.46		
Acetic acid	9.10		
Acetone	4.05		
Acetonitrile	4.27		
Acetophenone	19.69		
Acrolein	3.81		
Acrylic acid	12.21		
Acrylonitrile	5.22		
Allyl ether	9.65		
Allyl ethyl ether	6.41		
Amyl acetate	15.57		
Benzaldehyde	17.45		
Benzene	8.69		
Benzonitrile	18.21		



Agilent Technologies

DB-624 - Alphabetical (continued)

Compound	Retention time	Compound	Retention time	Compound	Retention time
1-Chloro-4-nitrobenzene	23.06	Ethylene glycol	12.15	Methanol	2.59
3-Chloropropene (Allyl chloride)	4.57	Ethylene glycol monobutyl ether	15.84	2-Methoxyethanol (Methyl cellosolve)	8.67
4-Chlorostyrene	19.35	Ethylene glycol monoethyl ether	10.95	Methyl acetate	4.60
2-Chlorotoluene	16.71	Ethylene glycol monomethyl ether	8.64	Methyl benzoate	19.90
3-Chlorotoluene	16.82	Ethyl ether	3.72	2-Methyl-1-butanol (Active amyl alcohol)	11.87
4-Chlorotoluene	16.82	Ethyl formate	4.27	2-Methyl-2-butanol (tert-Amyl alcohol)	8.73
Crotonaldehyde	9.18	2-Ethyl-1-hexanol	18.40	3-Methyl-1-butanol (iso-Amyl alcohol)	11.78
Cyclohexane	8.10	a-Ethylphenethyl alcohol	22.65	3-Methyl-2-butanone	9.21
Cyclohexanol	15.63	b-Ethylphenethyl alcohol	23.03	2-Methyl-3-buten-2-ol	7.91
Cyclohexanone	16.04	Ethyl propionate	10.37	3-Methyl-2-buten-1-ol	12.85
Cyclopentanol	13.16	Ethyl vinyl ether	3.72	2-Methylbutyl acetate	14.82
Cyclopentanone	13.39	Eluorobenzene	9.18	Methylene chloride	4.80
Decane	16.82	Fluorotrichloromethane (Freon 11)	3.24	Methyl formate	2.80
1,10-Decanediol	27.43	Furan	3.72	5-Methyl-3-heptanone	16.52
1-Decanol	22.65	Furfural	14.63	5-Methyl-2-hexanone	14.73
1,2-Dibromo-3-chloropropane (DBCP)	20.02	Furfuryl alcohol	15.32	2-Methyl-3-pentanone	11.85
1,2-Dibromoethane (EDB)	13.43	Glycidol	11.93	4-Methyl-2-pentanone	11.64
Dibromomethane	10.37	Glyme (Propylene glycol dimethyl ether)	8.65	(MIBK; Methyl isobutyl ketone)	
1,2-Dichlorobenzene	18.69	Heptanal	15.60	4-Methyl-2-pentanol	12.28
1,3-Dichlorobenzene	17.96	Heptane	9.15	4-Methyl-3-penten-3-one	13.20
1,4-Dichlorobenzene	18.79	1,7-Heptanediol	22.97	a-Methylphenyl alcohol	19.60
trans-1,4-Dichloro-2-butene	16.46	1-Heptanol	17.22	Methyl propionate	7.88
1,1-Dichloroethane	6.11	2-Heptanol	15.63	1-Methylpyrrolidone	19.66
1,2-Dichloroethane (Ethylene dichloride)	9.62	3-Heptanol	15.53	a-Methylstyrene	17.22
1,1-Dichloroethylene (Vinylidene chloride)	4.00	2-Heptanone	15.46	4-Methylstyrene	17.68
cis-1,2-Dichloroethylene	7.16	3-Heptanone	15.29	Methyl tert-butyl ether (MTBE)	5.30
trans-1,2-Dichloroethylene	5.33	4-Heptanone	14.95	Morpholine	12.98
1,1-Dichloropropane	8.72	trans-2-Hepten-1-ol	17.22	Nitrobenzene	20.35
1,2-Dichloropropane	10.17	cis-4-Hepten-1-ol	17.22	2-Nitrotoluene	21.60
1,3-Dichloropropane	12.86	Hexachloro-1,3-butadiene	21.69	3-Nitrotoluene	22.40
2,2-Dichloropropane	7.16	Hexadecane	26.63	4-Nitrotoluene	22.79
1,1-Dichloropropene	8.34	Hexanal	13.14	Nonanal	19.71
cis-1,3-Dichloropropene	11.38	Hexane	5.82	Nonane	14.63
trans-1,3-Dichloropropene	12.30	1,6-Hexanediol	21.30	1,9-Nonanediol	26.02
Diethylene glycol	18.24	1-Hexanol	15.06	1-Nonanol	20.97
Diethylene glycol monobutyl ether	21.46	2-Hexanol	13.31	Octanal	17.76
Diethylene glycol monoethyl ether	18.04	3-Hexanol	13.16	Octane	12.11
Diethylene glycol monomethyl ether	16.78	2-Hexanone	13.01	1,8-Octanediol	24.54
Diglyme (Diethylene glycol dimethyl ether)	9.92	3-Hexanone	12.80	1-Octanol	19.17
1,3-Diisopropylbenzene	20.35	cis-2-Hexen-1-ol	15.19	2-Octanone	17.63
1,4-Diisopropylbenzene	20.73	cis-3-Hexen-1-ol	14.88	3-Octanone	17.45
2,4-Dimethyl-3-pentanone	12.94	4-Hexen-3-one	14.24	Pentachlorobenzene	27.10
(Diisopropyl ketone)		4-Hydroxy-4-methyl-2-pentanone	14.98	Pentadecane	25.26
2,6-Dimethyl-4-heptanone	17.06	Iodobenzene	18.10	Pentanal (Valeraldehyde)	10.25
(Diisobutyl ketone)		Iodomethane	4.27	Pentane	3.37
1,4-Dioxane	10.38	iso-Amyl acetate	14.75	1,5-Pentanediol	19.52
1,3-Dioxolane	7.30	iso-Butanol	8.60	2,3-Pentanedione	10.34
DMF (Dimethylformamide)	13.73	iso-Butyl acetate	12.19	1-Pentanol	12.63
DMSO (Methyl sulfoxide)	15.58	iso-Butylbenzene	17.68	2-Pentanol	10.60
Dodecane	20.58	iso-Butyraldehyde	5.66	3-Pentanol	10.60
Epichlorohydrin	11.22	iso-Octane	8.81	2-Pentanone	10.11
Ethanol	3.47	Isophorone	21.04	3-Pentanone	10.34
2-Dthoxyethanol (Cellosolve)	10.98	iso-Propanol	4.27	1-Penten-3-ol	10.20
2-Dthoxyethyl acetate	15.57	iso-Propyl acetate	8.87	2-Penten-1-ol	12.63
Ethyl acetate	7.34	iso-Propylbenzene (Cumene)	15.88	1-Penten-3-one (Ethyl vinyl ketone)	10.03
Ethyl acrylate	10.02	iso-Propyl ether	6.23	3-Penten-2-one (Methyl vinyl ketone)	6.93
Ethylbenzene	14.42	Methacrolein	6.01	Pentyl ether	18.53
Ethyl benzoate	21.22	Methacrylonitrile	7.53		

DB-624 - Alphabetical (continued)

Compound	Retention time
2-Phenoxyethanol	22.65
4-Phenyl-2-butanone (Benzyl acetone)	22.91
1,3-Propanediol	13.13
1-Propanol	6.34
2-Propen-1-ol (Allyl alcohol)	6.21
Propionaldehyde	3.91
Propionic acid	11.89
Propionitrile	7.25
Propyl acetate	10.51
Propylbenzene	16.56
Propyl benzoate	22.92
Propylene glycol (1,2-Propanediol)	13.16
Propyl ether	9.05
Propyl formate	7.66
Propyl propionate	13.07
2-Propyn-1-ol (Propargyl alcohol)	7.55
Pyridine	11.70
sec-Butanol	7.55
sec-Butyl acetate	11.76
sec-Butylbenzene	17.68
Styrene	15.28
Styrene oxide	19.46
tert-Amyl methyl ether	8.89
tert-Butanol	5.01
tert-Butyl acetate	10.02
tert-Butylbenzene	17.39
tert-Butyl ethyl ether	6.90
4-tert-Butyltoluene	19.35
1,2,4,5-Tetrachlorobenzene	24.02
1,1,1,2-Tetrachloroethane	14.38
1,1,2,2-Tetrachloroethane	16.38
Tetrachloroethylene	12.86
Tetradecane	23.80
Tetrahydropyran	10.06
THF (Tetrahydrofuran)	7.64
m-Tolualdehyde	19.63
o-Tolualdehyde	19.63
p-Tolualdehyde	19.96
Toluene	11.93
1,2,3-Trichlorobenzene	22.23
1,2,4-Trichlorobenzene	21.41
1,3,5-Trichlorobenzene	20.35
1,1,1-Trichloroethane	8.05
1,1,2-Trichloroethane	12.60
Trichloroethylene	9.80
1,2,3-Trichloropropane	16.46
1,1,2-Trichlorotrifluoroethane (Freon 113)	4.00
Tridecane	22.24
Triethylamine	8.91
Triglyme (Triethylene glycol dimethyl ether)	21.95
1,2,3-Trimethylbenzene (Hemimellitene)	18.18
1,2,4-Trimethylbenzene (Pseudocumene)	17.47
1,3,5-Trimethylbenzene (Mesitylene)	16.82
Undecane	18.78
Vinyl acetate	6.37
m-Xylene	14.62
o-Xylene	15.28
p-Xylene	14.62

DB-624 - Retention

Column: DB-624

30 m x 0.53 mm id, 3 µm

P/N: 125-1334

Oven: 40 °C for 5 min

40-260 °C at 10 °/min

260 °C for 3 min

Carrier: Helium
at 30 cm/s (40 °C)

Injector: Split 1:10, 250 °C

Detector: FID, 300 °C

Retention time	Compound
2.46	Acetaldehyde
2.59	Methanol
2.80	Methyl formate
3.24	Fluorotrichloromethane (Freon 11)
3.37	Pentane
3.47	Ethanol
3.72	Ethyl ether
3.72	Ethyl vinyl ether
3.72	Furan
3.81	Acrolein
3.91	Propionaldehyde
4.00	1,1-Dichloroethylene (Vinylidene chloride)
4.00	1,1,2-Trichlorotrifluoroethane (Freon 113)
4.05	Acetone
4.27	Acetonitrile
4.27	Bromoethane
4.27	Carbon disulfide
4.27	Ethyl formate
4.27	Iodomethane
4.27	iso-Propanol
4.57	3-Chloropropene (Allyl chloride)
4.60	Methyl acetate
4.80	Methylene chloride
5.01	tert-Butanol
5.22	Acrylonitrile
5.30	Methyl tert-Butyl ether (MTBE)
5.33	trans-1,2-Dichloroethylene
5.66	iso-Butyraldehyde
5.82	Hexane
6.01	Methacrolein
6.11	1,1-Dichloroethane
6.21	2-Propen-1-ol (Allyl alcohol)
6.23	iso-Propyl ether
6.34	1-Propanol
6.37	Vinyl acetate
6.41	Allyl ethyl ether
6.84	Butyraldehyde
6.90	tert-Butyl ethyl ether
6.93	3-Penten-2-one (Methyl vinyl ketone)
6.99	2,3-Butanedione (Diacetal)
7.10	Butyl methyl ether
7.16	cis-1,2-Dichloroethylene
7.16	2,2-Dichloropropane
7.19	2-Butanone (MEK)
7.25	Propionitrile

Retention time	Compound
7.30	1,3-Dioxolane
7.34	Ethyl acetate
7.53	Methacrylonitrile
7.55	sec-Butanol
7.55	2-Propyn-1-ol (Propargyl alcohol)
7.59	Bromochloromethane
7.64	THF (Tetrahydrofuran)
7.66	Propyl formate
7.75	Chloroform
7.88	Methyl propionate
7.91	2-Methyl-3-buten-2-ol
8.05	1,1,1-Trichloroethane
8.10	Cyclohexane
8.25	1-Chlorobutane
8.34	Carbon tetrachloride
8.34	1,1-Dichloropropene
8.60	iso-Butanol
8.64	Ethylene glycol monomethyl ether
8.65	Glyme (Propylene glycol dimethyl ether)
8.67	2-Methoxyethanol (Methyl cellosolve)
8.69	Benzene
8.72	1,1-Dichloropropane
8.73	2-Methyl-2-butanol (tert-Amyl alcohol)
8.81	iso-Octane
8.87	iso-Propyl acetate
8.89	tert-Amyl methyl ether
8.91	Triethylamine
9.02	3-Buten-1-ol
9.05	Propyl ether
9.10	Acetic acid
9.15	Heptane
9.18	Crotonaldehyde
9.18	Fluorobenzene
9.21	3-Methyl-2-butanone
9.34	Butyl ethyl ether
9.62	1,2-Dichloroethane (Ethylene dichloride)
9.65	Allyl ether
9.73	1-Butanol
9.80	Trichloroethylene
9.87	2-Buten-1-ol (Crotyl alcohol)
9.92	Diglyme (Diethylene glycol dimethyl ether)
10.02	tert-Butyl acetate
10.02	Ethyl acrylate
10.03	1-Penten-3-one (Ethyl vinyl ketone)
10.06	Tetrahydropyran
10.11	2-Pentanone
10.17	1,2-Dichloropropane
10.20	1-Penten-3-ol
10.25	Pentanal (Valeraldehyde)
10.34	2,3-Pentanedione
10.34	3-Pentanone
10.37	Dibromomethane
10.37	Ethyl propionate
10.38	1,4-Dioxane
10.51	Propyl acetate
10.58	Acetal (Acetaldehyde diethyl acetal)
10.60	2-Pentanol
10.60	3-Pentanol
10.64	Bromodichloromethane

DB-624 - Retention (continued)

Retention time	Compound	Retention time	Compound	Retention time	Compound
10.95	Ethylene glycol monoethyl ether	14.82	2-Methylbutyl acetate	18.24	Diethylene glycol
10.98	2-Ethoxyethanol (Cellosolve)	14.88	<i>cis</i> -3-Hexen-1-ol	18.40	2-Ethyl-1-hexanol
11.22	Epichlorohydrin	14.95	4-Heptanone	18.53	Pentyl ether
11.38	<i>cis</i> -1,3-Dichloropropene	14.98	4-Hydroxy-4-methyl-2-pentanone	18.69	Butylbenzene
11.64	4-Methyl-2-pentanone	15.06	1-Hexanol	18.69	1,2-Dichlorobenzene
	MIBK (Methyl isobutyl ketone)	15.19	<i>cis</i> -2-Hexen-1-ol	18.78	Undecane
11.70	Pyridine	15.28	Styrene	18.79	1,4-Dichlorobenzene
11.76	<i>sec</i> -Butyl acetate	15.28	<i>o</i> -Xylene	19.17	1-Octanol
11.78	3-Methyl-1-butanol (<i>iso</i> -Amyl alcohol)	15.29	3-Heptanone	19.27	Benzyl alcohol
11.85	2-Methyl-3-pentanone	15.32	Furfuryl alcohol	19.35	4- <i>tert</i> -Butyltoluene
11.87	2-Methyl-1-butanol (Active amyl alcohol)	15.46	2-Heptanone	19.35	4-Chlorostyrene
11.89	Propionic acid	15.53	3-Heptanol	19.46	Styrene oxide
11.93	Glycidol	15.57	Amyl acetate	19.52	1,5-Pentanediol
11.93	Toluene	15.57	2-Ethoxyethyl acetate	19.60	α -Methylphenyl alcohol
12.11	Octane	15.58	DMSO (Methyl sulfoxide)	19.63	<i>m</i> -Tolualdehyde
12.15	Ethylene glycol	15.60	Heptanal	19.63	<i>o</i> -Tolualdehyde
12.19	<i>iso</i> -Butyl acetate	15.61	Bromoform	19.66	1-Methyl-pyrrolidone
12.21	Acrylic acid	15.63	Cyclohexanol	19.69	Acetophenone
12.28	4-Methyl-2-pentanol	15.63	2-Heptanol	19.71	Nonanal
12.30	<i>trans</i> -1,3-Dichloropropene	15.84	Ethylene glycol monobutyl ether	19.90	Methyl benzoate
12.60	1,1,2-Trichloroethane	15.88	<i>iso</i> -Propylbenzene (Cumene)	19.96	<i>p</i> -Tolualdehyde
12.63	1-Pentanol	15.89	2-Butoxyethanol (Butyl cellosolve)	20.02	1,2-Dibromo-3-chloropropane (DBCP)
12.63	2-Penten-1-ol	16.04	Cyclohexanone	20.35	1,3-Diisopropylbenzene
12.80	3-Hexanone	16.10	1,3-Butanediol	20.35	Nitrobenzene
12.85	3-Methyl-2-buten-1-ol	16.38	1,1,2,2-Tetrachloroethane	20.35	1,3,5-Trichlorobenzene
12.86	1,3-Dichloropropane	16.39	Bromobenzene	20.58	Dodecane
12.86	Tetrachloroethylene	16.46	<i>trans</i> -1,4-Dichloro-2-butene	20.73	1,4-Diisopropylbenzene
12.94	2,4-Dimethyl-3-pentanone	16.46	1,2,3-Trichloropropane	20.97	1-Nonanol
	(Diisopropyl ketone)	16.52	5-Methyl-3-heptanone	21.04	Isophorone
12.98	Morpholine	16.56	Propylbenzene	21.07	Benzyl acetate
13.01	2-Hexanone	16.71	2-Chlorotoluene	21.22	Ethyl benzoate
13.07	Propyl propionate	16.78	Diethylene glycol monomethyl ether	21.30	1,6-Hexanediol
13.13	1,3-Propanediol	16.82	3-Chlorotoluene	21.41	1,2,4-Trichlorobenzene
13.14	Hexanal	16.82	4-Chlorotoluene	21.46	Diethylene glycol monobutyl ether
13.16	Cyclopentanol	16.82	Decane	21.60	2-Nitrotoluene
13.16	3-Hexanol	16.82	1,3,5-Trimethylbenzene (Mesitylene)	21.69	Hexachloro-1,3-butadiene
13.16	1,2-Propanediol (Propylene glycol)	17.06	2,6-Dimethyl-4-heptanone	21.95	Triglyme (Triethylene glycol dimethyl ether)
13.20	4-Methyl-3-penten-3-one		(Diisobutyl ketone)	22.23	1,2,3-Trichlorobenzene
13.24	Butyl acetate	17.22	1-Heptanol	22.24	Tridecane
13.25	Chlorodibromomethane	17.22	<i>trans</i> -2-Hepten-1-ol	22.40	3-Nitrotoluene
13.31	2-Hexanol	17.22	<i>cis</i> -4-Hepten-1-ol	22.65	1-Decanol
13.39	Cyclopentanone	17.22	α -Methylstyrene	22.65	α -Ethylphenethyl alcohol
13.43	1,2-Dibromoethane (EDB)	17.39	<i>tert</i> -Butylbenzene	22.65	2-Phenoxyethanol
13.73	DMF (Dimethylformamide)	17.45	Benzaldehyde	22.79	4-Nitrotoluene
14.14	2,3-Butanediol	17.45	3-Octanone	22.91	4-Phenyl-2-butanone (Benzyl acetone)
14.21	1-Chlorohexane	17.47	1,2,4-Trimethylbenzene (Pseudocumene)	22.92	Propyl benzoate
14.24	4-Hexen-3-one	17.63	2-Octanone	22.97	1,7-Heptanediol
14.25	Chlorobenzene	17.68	<i>iso</i> -Butylbenzene	23.03	β -Ethylphenethyl alcohol
14.38	1,1,1,2-Tetrachloroethane	17.68	<i>sec</i> -Butylbenzene	23.06	1-Chloro-4-nitrobenzene
14.41	Butyl ether	17.68	4-Methylstyrene	23.80	Tetradecane
14.42	Ethylbenzene	17.70	1,4-Butanediol	24.02	1,2,4,5-Tetrachlorobenzene
14.62	<i>m</i> -Xylene	17.76	Octanal	24.54	1,8-Octanediol
14.62	<i>p</i> -Xylene	17.96	1,3-Dichlorobenzene	25.26	Pentadecane
14.63	Furfural	18.04	Diethylene glycol monoethyl ether	26.02	1,9-Nonanediol
14.63	Nonane	18.10	Iodobenzene	26.63	Hexadecane
14.73	5-Methyl-2-hexanone	18.18	1,2,3-Trimethylbenzene (Hemimellitene)	27.10	Pentachlorobenzene
14.75	<i>iso</i> -Amyl acetate	18.21	Benzonitrile	27.43	1,10-Decanediol
				29.08	Benzyl ether

DB-1 - Alphabetical

Column: DB-1
30 m × 0.53 mm id, 3 µm

P/N: 125-1034

Oven: 40 °C for 5 min
40-260 °C at 10 °/min

Carrier: Helium
at 30 cm/s (40 °C)

Injector: Split 1:10, 250 °C

Detector: FID, 300 °C

Retention time	Compound
Acetal (Acetaldehyde diethyl acetal)	10.21
Acetaldehyde	2.16
Acetic acid	16.87
Acetone	3.05
Acetonitrile	2.87
Acetophenone	18.13
Acrolein	2.98
Acrylic acid	19.16
Acrylonitrile	3.43
Allyl ether	9.05
Allyl ethyl ether	6.00
Amyl acetate	14.04
Benzaldehyde	15.88
Benzene	8.00
Benzonitrile	16.26
Benzyl acetate	19.86
Benzyl alcohol	17.42
Benzyl ether	27.72
Bromobenzene	15.54
Bromochloromethane	4.79
Bromodichloromethane	9.22
Bromoethane	3.75
Bromoform	14.20
1,3-Butanediol	13.30
1,4-Butanediol	15.03
2,3-Butanediol	11.40
2,3-Butanedione (Diacetal)	5.09
1-Butanol	7.90
2-Butanone (MEK; Methyl ethyl ketone)	5.41
2-Buten-1-ol (Crotyl alcohol)	7.99
3-Buten-1-ol	6.95
2-Butoxyethanol (Butyl cellosolve)	14.72
Butyl acetate	12.36
Butyl ether	14.39
Butyl ethyl ether	9.18
Butyl methyl ether	6.85
Butylbenzene	18.24
Butyraldehyde	5.29
iso-Butyraldehyde	4.37
Carbon disulfide	4.09
Carbon tetrachloride	8.18
Chlorobenzene	13.44
1-Chlorobutane	7.56
Chlorodibromomethane	11.81
Chloroform	6.34

Retention time	Compound
1-Chlorohexane	13.69
1-Chloro-4-nitrobenzene	21.34
3-Chloropropene (Allyl chloride)	3.96
4-Chlorostyrene	18.56
2-Chlorotoluene	16.07
3-Chlorotoluene	16.07
4-Chlorotoluene	16.07
Crotonaldehyde	7.03
Cyclohexane	8.32
Cyclohexanol	14.26
Cyclohexanone	14.26
Cyclopentanol	11.56
Cyclopentanone	11.42
2,4-Dimethyl-3-pentanone (Diisopropyl ketone)	11.90
2,6-Dimethyl-4-heptanone (Diisobutyl ketone)	16.26
Decane	17.12
1,10-Decanediol	25.84
1-Decanol	21.85
1,2-Dibromo-3-chloropropane (DBCP)	18.50
1,2-Dibromoethane (EDB)	12.10
Dibromomethane	8.93
1,2-Dichlorobenzene	17.81
1,3-Dichlorobenzene	17.20
1,4-Dichlorobenzene	17.31
trans-1,4-Dichloro-2-butene	14.91
1,1-Dichloroethane	5.02
1,2-Dichloroethane (Ethylene dichloride)	7.17
1,1-Dichloroethylene (Vinylidene chloride)	3.75
cis-1,2-Dichloroethylene	5.98
trans-1,2-Dichloroethylene	6.17
1,1-Dichloropropane	8.55
1,2-Dichloropropane	8.93
1,3-Dichloropropane	11.35
2,2-Dichloropropane	6.34
1,1-Dichloropropene	7.85
cis-1,3-Dichloropropene	10.20
trans-1,3-Dichloropropene	10.80
Diethylene glycol	15.60
Diethylene glycol monobutyl ether	20.26
Diethylene monoethyl ether	16.60
Diethylene monomethyl ether	15.09
Diglyme (Diethylene glycol dimethyl ether)	8.68
1,3-Diisopropylbenzene	20.02
1,4-Diisopropylbenzene	20.42
DMF (Dimethylformamide)	10.80
DMSO (Methylsulfoxide)	11.94
1,4-Dioxane	9.18
1,3-Dioxolane	4.09
Dodecane	20.85
Epichlorohydrin	9.35
Ethanol	2.68
2-Ethoxyethanol (Cellosolve)	9.39
2-Ethoxyethyl acetate	14.40
Ethyl acetate	6.21
Ethyl acrylate	8.93
Ethylbenzene	13.90

Retention time	Compound
Ethyl benzoate	20.15
Ethylene glycol	8.54
Ethylene glycol monobutyl ether	14.68
Ethylene glycol monoethyl ether	9.35
Ethylene glycol monomethyl ether	6.72
Ethyl ether	3.50
Ethyl formate	3.56
2-Ethyl-1-hexanol	17.42
a-Ethylphenethyl alcohol	21.38
b-Ethylphenethyl alcohol	21.71
Ethyl propionate	9.42
Ethyl vinyl ether	3.50
Fluorobenzene	8.36
Fluorotrichloromethane (Freon 11)	3.23
Furan	3.36
Furfural	12.54
Furfuryl alcohol	13.25
Glycidol	9.10
Glyme (Propylene glycol dimethyl ether)	7.56
Heptanal	14.52
Heptane	9.58
1,7-Heptanediol	21.03
1-Heptanol	16.13
2-Heptanol	14.61
3-Heptanol	14.54
2-Heptanone	14.26
3-Heptanone	14.19
4-Heptanone	13.88
trans-2-Hepten-1-ol	16.13
cis-4-Hepten-1-ol	16.02
Hexachloro-1,3-butadiene	21.46
Hexadecane	26.88
Hexanal	11.88
Hexane	6.25
1,6-Hexanediol	19.17
1-Hexanol	13.81
2-Hexanol	12.06
3-Hexanol	11.97
2-Hexanone	11.60
3-Hexanone	11.52
cis-2-Hexen-1-ol	13.81
cis-3-Hexen-1-ol	13.51
4-Hexen-3-one	12.76
4-Hydroxy-4-methyl-2-pentanone	12.89
Iodobenzene	17.87
Iodomethane	3.75
iso-Amyl acetate	13.97
iso-Butanol	6.74
iso-Butyl acetate	11.30
iso-Butylbenzene	17.31
iso-Octane	9.27
Isophorone	19.31
iso-Propanol	3.22
iso-Propyl acetate	7.88
iso-Propyl ether	6.21
iso-Propylbenzene (Cumene)	15.43
Methacrolein	4.68
Methacrylonitrile	5.36

DB-1 - Alphabetical (continued)

Retention time	Compound
Methanol	2.15
2-Methoxyethanol (Methyl cellosolve)	6.74
Methyl acetate	3.79
Methyl benzoate	18.76
2-Methyl-1-butanol (Active amyl alcohol)	10.30
2-Methyl-2-butanol (tert-Amyl alcohol)	7.14
3-Methyl-1-butanol (iso-Amyl alcohol)	10.17
3-Methyl-2-butanone	7.60
2-Methyl-3-buten-2-ol	6.17
3-Methyl-2-buten-1-ol	11.33
2-Methylbutyl acetate	14.81
Methylene chloride	3.85
Methyl formate	2.44
5-Methyl-3-heptanone	15.55
5-Methyl-2-hexanone	13.46
2-Methyl-3-pentanone	10.59
4-Methyl-2-pentanone	10.22
(MIBK; Methyl isobutyl ketone)	
4-Methyl-2-pentanol	10.93
4-Methyl-3-penten-3-one	11.90
a-Methylphenyl alcohol	18.03
Methyl propionate	6.78
1-Methyl-2-pyrrolidone	17.21
a-Methylstyrene	16.62
4-Methylstyrene	16.99
Methyl tert-Butyl ether (MTBE)	5.06
Morpholine	13.62
Nonanal	18.84
Nonane	14.95
1,9-Nonanediol	24.33
1-Nonanol	20.11
Nitrobenzene	18.56
2-Nitrotoluene	20.02
3-Nitrotoluene	20.72
4-Nitrotoluene	21.05
Octanal	16.80
Octane	12.48
1,8-Octanediol	22.73
1-Octanol	18.21
2-Octanone	16.46
3-octanone	16.46
Pentachlorobenzene	26.38
Pentadecane	25.51
Pentanal (Valeraldehyde)	8.76
Pentane	3.51
1,5-Pentenediol	17.17
2,3-Pentanedione	8.66
1-Pentanol	11.11
2-Pentanol	9.10
3-Pentanol	9.10
2-Pentanone	8.46
3-Pentanone	8.80
1-Penten-3-ol	8.54
2-Penten-1-ol	11.11
1-Penten-3-one (Ethyl vinyl ketone)	8.40
3-Penten-2-one (Methyl vinyl ketone)	5.09
Pentyl ether	18.51
2-Phenoxyethanol	20.92

Retention time	Compound
4-Phenyl-2-butanone (Benzyl acetone)	21.36
1,3-Propanediol	9.95
1-Propanol	4.44
2-Propen-1-ol (Allyl alcohol)	4.09
Propionaldehyde	3.11
Propionic acid	18.18
Propionitrile	4.43
2-Propyn-1-ol (Propargyl alcohol)	4.57
Propyl acetate	9.47
Propylbenzene	16.07
Propyl benzoate	21.91
Propyl ether	9.05
1,2-Propanediol (Propylene glycol)	9.90
Propyl formate	6.48
Propyl propionate	12.25
Pyridine	10.21
sec-Butanol	5.80
sec-Butyl acetate	10.91
sec-Butylbenzene	17.37
Styrene	14.55
Styrene oxide	18.24
tert-Amyl methyl ether	8.68
tert-Butanol	3.72
tert-Butyl acetate	9.32
tert-Butylbenzene	16.99
tert-Butyl ethyl ether	6.85
4-tert-Butyltoluene	18.97
1,2,4,5-Tetrachlorobenzene	23.35
1,1,1,2-Tetrachloroethane	13.43
1,1,2,2-Tetrachloroethane	14.67
Tetrachloroethylene	12.66
Tetradecane	24.06
Tetrahydropyran	9.35
THF (Tetrahydrofuran)	6.75
m-Tolualdehyde	18.23
o-Tolualdehyde	18.23
p-Tolualdehyde	18.50
Toluene	11.33
1,2,3-Trichlorobenzene	21.28
1,2,4-Trichlorobenzene	20.63
1,3,5-Trichlorobenzene	19.85
1,1,1-Trichloroethane	7.56
1,1,2-Trichloroethane	11.00
Trichloroethylene	9.22
1,2,3-Trichloropropane	14.84
1,1,2-Trichlorotrifluoroethane (Freon 113)	4.09
Tridecane	22.51
Triethylamine	8.93
Triglyme (Triethylene glycol dimethyl ether)	20.75
1,2,3-Trimethylbenzene (Hemimellitene)	17.61
1,2,4-Trimethylbenzene (Pseudocumene)	16.99
1,3,5-Trimethylbenzene (Mesitylene)	16.41
Undecane	19.07
Vinyl acetate	4.09
m-Xylene	14.11
o-Xylene	14.69
p-Xylene	14.11

DB-1 - Retention

Column:	DB-1
	30 m × 0.53 mm id, 3 µm
P/N:	125-1034
Oven:	40 °C for 5 min
	40–260 °C at 10 °/min
Carrier:	Helium
	at 30 cm/s (40 °C)
Injector:	Split 1:10, 250 °C
Detector:	FID, 300 °C

Retention time	Compound
2.15	Methanol
2.16	Acetaldehyde
2.44	Methyl formate
2.68	Ethanol
2.87	Acetonitrile
2.98	Acrolein
3.05	Acetone
3.11	Propionaldehyde
3.22	iso-Propanol
3.23	Fluorotrichloromethane (Freon 11)
3.36	Furan
3.43	Acrylonitrile
3.50	Ethyl ether
3.50	Ethyl vinyl ether
3.51	n-Pentane
3.56	Ethyl formate
3.72	tert-Butanol
3.75	Bromoethane
3.75	1,1-Dichloroethylene (Vinylidene chloride)
3.75	Iodomethane
3.79	Methyl acetate
3.85	Methylene chloride
3.96	3-Chloropropene (Allyl chloride)
4.09	2-Propen-1-ol (Allyl alcohol)
4.09	Carbon disulfide
4.09	Vinyl acetate
4.09	1,3-Dioxolane
4.09	1,1,2-Trichlorotrifluoroethane (Freon 113)
4.37	tert-Butylaldehyde
4.43	Propionitrile
4.44	1-Propanol
4.57	2-Propyn-1-ol (Propargyl alcohol)
4.68	Methacrolein
4.79	Bromochloromethane
5.02	1,1-Dichloroethane
5.06	Methyl tert-Butyl ether (MTBE)
5.09	3-Penten-2-one (Methyl vinyl ketone)
5.09	2,3-Butanedione (Diactal)
5.29	Butyraldehyde
5.36	Methacrylonitrile
5.41	2-Butanone (MEK; Methyl ethyl ketone)
5.80	sec-Butanol
5.98	cis-1,2-Dichloroethylene
6.00	Allyl ethyl ether
6.17	trans-1,2-Dichloroethylene

DB-1 - Retention (continued)

Retention time	Compound	Retention time	Compound	Retention time	Compound
6.17	2-Methyl-3-buten-2-ol	9.39	2-Ethoxyethanol (Cellosolve)	13.97	<i>iso</i> -Amyl acetate
6.21	Ethyl acetate	9.42	Ethyl propionate	14.04	Amyl acetate
6.21	<i>iso</i> -Propyl ether	9.47	Propyl acetate	14.11	m-Xylene
6.25	n-Hexane	9.58	n-Heptane	14.11	p-Xylene
6.34	Chloroform	9.90	Propylene glycol (1,2-Propanediol)	14.19	3-Heptanone
6.34	2,2-Dichloropropane	9.95	1,3-Propanediol	14.20	Bromoform
6.48	Propyl formate	10.17	3-Methyl-1-butanol (<i>iso</i> -Amyl alcohol)	14.26	Cyclohexanol
6.72	Ethylene glycol methyl ether	10.20	<i>cis</i> -1,3-Dichloropropene	14.26	Cyclohexanone
6.74	<i>iso</i> -Butanol	10.21	Pyridine	14.26	2-Heptanone
6.74	2-Methoxyethanol (Methyl cellosolve)	10.21	Acetal (Acetaldehyde diethyl acetal)	14.39	Butyl ether
6.75	THF (Tetrahydrofuran)	10.22	4-Methyl-2-pentanone	14.40	2-Ethoxyethyl acetate
6.78	Methyl propionate		(MIBK; Methyl isobutyl ketone)	14.52	Heptanal
6.85	<i>tert</i> -Butyl ethyl ether	10.30	2-Methyl-1-butanol (Active amyl alcohol)	14.54	3-Heptanol
6.85	Butyl methyl ether	10.59	2-Methyl-3-pentanone	14.55	Styrene
6.95	3-Buten-1-ol	10.80	<i>trans</i> -1,3-Dichloropropene	14.61	2-Heptanol
7.03	Crotonaldehyde	10.80	DMF (Dimethylformamide)	14.67	1,1,2,2-Tetrachloroethane
7.14	2-Methyl-2-butanol (<i>tert</i> -Amyl alcohol)	10.91	<i>sec</i> -Butyl acetate	14.68	Ethylene glycol butyl ether
7.17	1,2-Dichloroethane (Ethylene dichloride)	10.93	4-Bethyl-2-pentanol	14.69	o-Xylene
7.56	1,1,1-Trichloroethane	11.00	1,1,2-Trichloroethane	14.72	2-Butoxyethanol (Butyl cellosolve)
7.56	1-Chlorobutane	11.11	1-Pentanol	14.81	2-Methylbutyl acetate
7.56	Glyme (Propylene glycol dimethyl ether)	11.11	2-Penten-1-ol	14.84	1,2,3-Trichloropropane
7.60	3-Methyl-2-butanone	11.30	<i>iso</i> -Butyl acetate	14.91	<i>trans</i> -1,4-Dichloro-2-butene
7.85	1,1-Dichloropropene	11.33	3-Methyl-2-buten-1-ol	14.95	n-Nonane
7.88	<i>iso</i> -Propyl acetate	11.33	Toluene	15.03	1,4-Butanediol
7.90	1-Butanol	11.35	1,3-Dichloropropane	15.09	Diethylene glycol methyl ether
7.99	2-Buten-1-ol (Crotyl alcohol)	11.40	2,3-Butanediol	15.43	<i>iso</i> -Propylbenzene (Cumene)
8.00	Benzene	11.42	Cyclopentanone	15.54	Bromobenzene
8.18	Carbon tetrachloride	11.52	3-Hexanone	15.55	5-Methyl-3-heptanone
8.32	Cyclohexane	11.56	Cyclopentanol	15.60	Diethylene glycol
8.36	Fluorobenzene	11.60	2-Hexanone	15.88	Benzaldehyde
8.40	1-Penten-3-one (Ethyl vinyl ketone)	11.81	Chlorodibromomethane	16.02	<i>cis</i> -4-Hepten-1-ol
8.46	2-Pentanone	11.88	Hexanal	16.07	2-Chlorotoluene
8.54	Ethylene glycol	11.90	4-Methyl-3-penten-3-one	16.07	3-Chlorotoluene
8.54	1-Penten-3-ol	11.90	2,4-Dimethyl-3-pentanone	16.07	4-Chlorotoluene
8.55	1,1-Dichloropropane		(Diisopropyl ketone)	16.07	Propylbenzene
8.66	2,3-Pentanedione	11.94	DMSO (Methyl sulfoxide)	16.13	<i>trans</i> -2-Hepten-1-ol
8.68	<i>tert</i> -Amyl methyl ether	11.97	3-Hexanol	16.13	1-Heptanol
8.68	Diglyme (Diethylene glycol dimethyl ether)	12.06	2-Hexanol	16.26	Benzonitrile
8.76	Pentanal (Valeraldehyde)	12.10	1,2-Dibromoethane (EDB)	16.26	2,6-Dimethyl-4-heptanone
8.80	3-Pentanone	12.25	Propyl propionate		(Diisobutyl ketone)
8.93	Ethyl acrylate	12.36	Butyl acetate	16.41	1,3,5-Trimethylbenzene (Mesitylene)
8.93	1,2-Dichloropropane	12.48	n-Octane	16.46	2-Octanone
8.93	Dibromomethane	12.54	Furfural	16.46	3-Octanone
8.93	Triethylamine	12.66	Tetrachloroethylene	16.60	Diethylene glycol ethyl ether
9.05	Allyl ether	12.76	4-Hexen-3-one	16.62	α -Methylstyrene
9.05	Propyl ether	12.89	4-Hydroxy-4-methyl-2-pentanone	16.80	Octanal
9.10	Glycidol	13.25	Furfuryl alcohol	16.87	Acetic acid
9.10	2-Pentanol	13.30	1,3-Butanediol	16.99	<i>tert</i> -Butylbenzene
9.10	3-Pentanol	13.43	1,1,1,2-Tetrachloroethane	16.99	4-Methylstyrene
9.18	1,4-Dioxane	13.44	Chlorobenzene	16.99	1,2,4-Trimethylbenzene (Pseudocumene)
9.18	Butyl ethyl ether	13.46	5-Methyl-2-hexanone	17.12	n-Decane
9.22	Bromodichloromethane	13.51	<i>cis</i> -3-Hexen-1-ol	17.17	1,5-Pentanediol
9.22	Trichloroethylene	13.62	Morpholine	17.20	1,3-Dichlorobenzene
9.27	<i>iso</i> -Octane	13.69	1-Chlorohexane	17.21	1-Methyl-2-pyrrolidone
9.32	<i>tert</i> -Butyl acetate	13.81	1-Hexanol	17.31	<i>iso</i> -Butylbenzene
9.35	Epichlorohydrin	13.81	<i>cis</i> -2-Hexen-1-ol	17.31	1,4-Chlorobenzene
9.35	Ethylene glycol ethyl ether	13.88	4-Heptanone	17.37	<i>sec</i> -Butylbenzene
9.35	Tetrahydropyran	13.90	Ethylbenzene		

DB-1 - Retention (continued)

Retention time	Compound
17.42	Benzyl alcohol
17.42	2-Ethyl-1-hexanol
17.61	1,2,3-Trimethylbenzene (Hemimellitene)
17.81	1,2-Dichlorobenzene
17.87	Iodobenzene
18.03	α -Methylphenyl alcohol
18.13	Acetophenone
18.18	Propionic acid
18.21	1-Octanol
18.23	m-Tolualdehyde
18.23	o-Tolualdehyde
18.24	Styrene oxide
18.24	Butylbenzene
18.50	1,2-Dibromo-3-chloropropane (DBCP)
18.50	p-Tolualdehyde
18.51	Pentyl ether
18.56	4-Chlorostyrene
18.56	Nitrobenzene
18.76	Methyl benzoate
18.84	Nonanal
18.97	4-tert-Butyltoluene
19.07	n-Undecane
19.17	1,6-Hexanediol
19.31	Isophorone
19.61	Acrylic acid
19.85	1,3,5-Trichlorobenzene
19.86	Benzyl acetate
20.02	1,3-Diisopropylbenzene
20.02	2-Nitrotoluene
20.11	1-Nonanol
20.15	Ethyl benzoate
20.26	Diethylene glycol butyl ether
20.42	1,4-Diisopropylbenzene
20.63	1,2,4-Trichlorobenzene
20.72	3-Nitrotoluene
20.75	Triglyme (Triethylene glycol dimethyl ether)
20.85	n-Dodecane
20.92	2-Phenoxyethanol
21.03	1,7-Heptanediol
21.05	4-Nitrotoluene
21.28	1,2,3-Trichlorobenzene
21.34	1-Chloro-4-nitrobenzene
21.36	4-Phenyl-2-butanone (Benzyl acetone)
21.38	α -Ethylphenethyl alcohol
21.46	Hexachloro-1,3-butadiene
21.71	β -Ethylphenethyl alcohol
21.85	1-Decanol
21.91	Propyl benzoate
22.51	n-Tridecane
22.73	1,8-Octanediol
23.35	1,2,4,5-Tetrachlorobenzene
24.06	n-Tetradecane
24.33	1,9-Nonanediol
25.51	n-Pentadecane
25.84	1,10-Decanediol
26.38	Pentachlorobenzene
26.88	n-Hexadecane
27.72	Benzyl ether

DB-WAX - Alphabetical

Column:	DB-WAX
	30 m \times 0.53 mm id, 1 μ m
P/N:	125-7032
Oven:	40 °C for 5 min
	40–230 °C at 10 °/min
	230 °C for 7 min
Carrier:	Helium
	at 34 cm/sec (40 °C)
Injector:	Split 1:10, 250 °C
Detector:	FID, 300 °C

Retention time	Compound
Acetal (Acetaldehyde diethyl acetal)	5.09
Acetaldehyde	2.47
Acetic acid	16.87
Acetone	3.60
Acetonitrile	8.12
Acetophenone	20.13
Acrolein	4.10
Acrylic acid	19.61
Acrylonitrile	7.81
Allyl ether	6.04
Allyl ethyl ether	3.05
Amyl acetate	10.96
Benzaldehyde	17.25
Benzene	6.46
Benzonitrile	19.55
Benzyl acetate	21.01
Benzyl alcohol	22.82
Benzyl ether	30.41
Bromobenzene	15.47
Bromochloromethane	9.26
Bromodichloromethane	11.76
Bromoethane	2.95
Bromoform	17.00
1,3-Butanediol	20.96
1,4-Butanediol	23.14
2,3-Butanediol	18.70
2,3-Butanedione (Diacetal)	7.44
1-Butanol	11.48
2-Butanone (MEK; methyl ethyl ketone)	5.35
2-Buten-1-ol (Crotyl alcohol)	12.95
3-Buten-1-ol	12.02
2-Butoxyethanol (Butyl cellosolve)	16.31
Butyl acetate	9.85
Butylbenzene	14.81
Butyl ether	6.97
Butyl ethyl ether	3.27
Butyl methyl ether	2.80
Butyraldehyde	4.72
Carbon disulfide	2.65
Carbon tetrachloride	4.85
Chlorobenzene	13.00
1-Chlorobutane	3.99
Chlorodibromomethane	14.52
Chloroform	8.58
1-Chlorohexane	9.10
1-Chloro-4-nitrobenzene	23.97
3-Chloropropene (Allyl chloride)	3.46
4-Chlorostyrene	18.19
2-Chlorotoluene	14.71
3-Chlorotoluene	14.90
4-Chlorotoluene	14.90
Crotonaldehyde	9.07
Cyclohexane	2.27
Cyclohexanol	16.31
Cyclohexanone	14.61
Cyclopentanol	14.57
Cyclopentanone	12.46
Decane	7.63
1,10-Decanediol	34.11
1-Decanol	21.12
1,2-Dibromo-3-chloropropane (DBCP)	20.57
1,2-Dibromoethane (EDB)	13.80
Dibromomethane	11.98
1,2-Dichlorobenzene	17.80
1,3-Dichlorobenzene	16.60
1,4-Dichlorobenzene	17.06
trans-1,4-Dichloro-2-butene	17.00
1,1-Dichloroethane	9.10
1,2-Dichloroethane (Ethylene dichloride)	7.20
1,1-Dichloroethylene (Vinylidene chloride)	2.65
cis-1,2-Dichloroethylene	7.84
trans-1,2-Dichloroethylene	4.38
1,1-Dichloropropane	9.71
1,2-Dichloropropane	4.95
1,3-Dichloropropane	12.38
2,2-Dichloropropane	3.99
1,1-Dichloropropene	4.56
cis-1,3-Dichloropropene	11.27
trans-1,3-Dichloropropene	12.78
Diethylene glycol	23.91
Diethylene glycol monobutyl ether	21.74
Diethylene glycol monoethyl ether	19.48
Diethylene glycol monomethyl ether	19.06
Diglyme (Diethylene glycol dimethyl ether)	6.04
1,3-Diisopropylbenzene	15.47
1,4-Diisopropylbenzene	16.20
2,4-Dimethyl-3-pentanone	7.94
(Diisopropyl ketone)	
2,6-Dimethyl-4-heptanone	12.03
(Diisobutyl ketone)	
1,4-Dioxane	9.65
1,3-Dioxolane	7.09
DMF (Dimethylformamide)	15.25
DMSO (Methyl sulfoxide)	19.21
Dodecane	12.23
Epichlorohydrin	11.69
Ethanol	6.46
2-Ethoxyethanol (Cellosolve)	13.11
2-Ethoxyethyl acetate	14.31
Ethyl acetate	5.03

DB-WAX - Alphabetical (continued)

Retention time	Compound	Retention time	Compound	Retention time	Compound
Ethyl acrylate	7.87	Methacrolein	4.83	2-Phenoxyethanol	26.14
Ethylbenzene	11.13	Methacrylonitrile	7.54	4-Phenyl-2-butanone (Benzyl acetone)	22.76
Ethyl benzoate	20.27	Methanol	5.40	1,3-Propanediol	18.97
Ethylene glycol	19.47	2-Methoxyethanol (Methyl cellosolve)	12.25	1-Propanol	9.11
Ethylene glycol monobutyl ether	16.24	Methyl acetate	3.78	2-Propen-1-ol (Allyl alcohol)	10.78
Ethylene glycol monoethyl ether	13.11	Methyl benzoate	19.70	Propionaldehyde	3.25
Ethylene glycol monomethyl ether	12.24	2-Methyl-1-butanol (Active amyl alcohol)	12.73	Propionic acid	18.18
Ethyl ether	2.13	2-Methyl-2-butanol (tert-Amyl alcohol)	8.43	Propionitrile	8.72
Ethyl formate	3.78	3-Methyl-1-butanol (iso-Amyl alcohol)	12.73	Propyl acetate	7.38
2-Ethyl-1-hexanol	17.41	3-Methyl-2-butanone	6.15	Propylbenzene	12.86
a-Ethylphenethyl alcohol	23.10	2-Methyl-3-buten-2-ol	9.11	Propyl benzoate	21.46
b-Ethylphenethyl alcohol	24.12	3-Methyl-2-buten-1-ol	14.82	1,2-Propanediol (Propylene glycol)	18.96
Ethyl propionate	6.93	2-Methylbutyl acetate	12.05	Propyl ether	3.05
Ethyl vinyl ether	2.39	Methylene chloride	6.18	Propyl formate	5.93
Fluorobenzene	7.72	Methyl formate	2.85	Propyl propionate	9.17
Fluorotrichloromethane (Freon 11)	2.13	5-Methyl-3-heptanone	12.38	2-Propyn-1-ol (Propargyl alcohol)	15.16
Furan	3.27	5-Methyl-2-hexanone	11.40	Pyridine	12.44
Furfural	18.32	2-Methyl-3-pentanone	7.94	sec-Butanol	8.77
Furfuryl alcohol	19.90	4-Methyl-2-pentanone	8.19	sec-Butyl acetate	7.69
Glycidol	17.25	(MIBK; Methyl isobutyl ketone)		sec-Butylbenzene	13.64
Glyme (Propylene glycol dimethyl ether)	6.04	4-Methyl-2-pentanol	11.89	Styrene	13.80
Heptanal	12.32	4-Methyl-3-penten-3-one	11.26	Styrene oxide	19.46
Heptane	2.65	a-Methylphenyl alcohol	22.00	tert-Amyl methyl ether	3.27
1,7-Heptanediol	27.26	Methyl propionate	5.54	tert-Butanol	5.54
1-Heptanol	16.91	a-Methylstyrene	15.13	tert-Butyl acetate	5.40
2-Heptanol	14.71	4-Methylstyrene	15.61	tert-Butylbenzene	13.41
3-Heptanol	14.29	1-Methyl-2-pyrrolidone	20.71	tert-Butyl ethyl ether	2.47
2-Heptanone	12.27	Methyl tert-Butyl ether (MTBE)	2.30	4-tert-Butyltoluene	15.13
3-Heptanone	11.66	Morpholine	13.62	1,2,4,5-Tetrachlorobenzene	22.08
4-Heptanone	11.06	Nitrobenzene	21.41	1,1,1,2-Tetrachloroethane	13.80
trans-2-Hepten-1-ol	17.77	2-Nitrotoluene	22.62	1,1,2,2-Tetrachloroethane	17.73
cis-4-Hepten-1-ol	17.67	3-Nitrotoluene	21.92	Setrachloroethylene	8.58
Hexachloro-1,3-butadiene	17.84	4-Nitrotoluene	23.14	Tetradecane	15.75
Hexadecane	18.70	Nonanal	16.05	Setrahydropyran	5.83
Hexanal	10.07	Nonane	4.97	THF (Tetrahydrofuran)	4.45
1,6-Hexanediol	25.75	1,9-Nonanediol	31.29	m-Tolualdehyde	19.77
Hexane	2.05	1-Nonanol	19.80	o-Tolualdehyde	19.73
1-Hexanol	15.31	Octanal	14.29	p-Tolualdehyde	20.13
2-Hexanol	12.95	Octane	3.22	Toluene	9.06
3-Hexanol	12.49	1,8-Octanediol	29.06	1,2,3-Trichlorobenzene	21.25
2-Hexanone	10.04	1-Octanol	18.40	1,2,4-Trichlorobenzene	20.03
3-Hexanone	9.34	2-Octanone	14.20	1,3,5-Trichlorobenzene	18.19
cis-2-Hexen-1-ol	16.31	3-Octanone	13.66	1,1,1-Trichloroethane	4.85
cis-3-Hexen-1-ol	15.87	Pentachlorobenzene	25.09	1,1,2-Trichloroethane	13.80
4-Hexen-3-one	12.55	Pentadecane	17.28	Trichloroethylene	7.84
4-Hydroxy-4-methyl-2-pentanone	15.70	Pentanal (Valerlaldehyde)	7.46	1,2,3-Trichloropropane	17.06
Iodobenzene	18.30	Pentane	1.89	1,1,2-Trichlorotrifluoroethane (Freon 113)	2.13
Iodomethane	3.46	1,5-Pentanediol	24.43	Tridecane	14.09
iso-Amyl acetate	10.96	2,3-Pentanedione	9.49	Triethylamine	3.26
iso-Butanol	10.31	1-Pentanol	13.54	Triglyme (Triethylene glycol dimethyl ether)	20.77
iso-Butyl acetate	8.36	2-Pentanol	10.94	1,2,3-Trimethylbenzene (Hemimellitene)	15.29
iso-Butylbenzene	13.47	3-Pentanol	10.66	1,2,4-Trimethylbenzene (Pseudocumene)	14.27
iso-Butyraldehyde	3.54	2-Pentanone	7.44	1,3,5-Trimethylbenzene (Mesitylene)	13.55
iso-Octane	2.44	3-Pentanone	7.44	Undecane	10.10
Isophorone	19.47	1-Penten-3-ol	11.77	Vinyl acetate	5.03
iso-Propanol	6.28	2-Penten-1-ol	14.65	m-Xylene	11.44
iso-Propyl acetate	5.32	1-Penten-3-one (Ethyl vinyl ketone)	8.56	o-Xylene	12.39
iso-Propylbenzene (Cumene)	12.13	3-Penten-2-one (Methyl vinyl ketone)	6.61	p-Xylene	11.30
iso-Propyl ether	3.27	Pentyl ether	12.66		

DB-WAX - Retention**Column: DB-WAX****30 m × 0.53 mm id, 1 µm****P/N: 125-7032**

Oven: 40 °C for 5 min

40–230 °C at 10 °/min

230 °C for 7 min

Carrier: Helium

at 34 cm/sec (40 °C)

Injector: Split 1:10, 250 °C

Detector: FID, 300 °C

Retention time	Compound
1.89	Pentane
2.05	Hexane
2.13	Ethyl ether
2.13	Fluorotrichloromethane (Freon 11)
2.13	1,1,2-Trichlorotrifluoroethane (Freon 113)
2.27	Cyclohexane
2.30	Methyl tert-Butyl ether (MTBE)
2.39	Ethyl vinyl ether
2.44	iso-Octane
2.47	Acetaldehyde
2.47	tert-Butyl ethyl ether
2.65	Carbon disulfide
2.65	1,1-Dichloroethylene (Vinylidene chloride)
2.65	Heptane
2.80	Butyl methyl ether
2.85	Methyl formate
2.95	Bromoethane
3.05	Allyl ethyl ether
3.05	Propyl ether
3.22	Octane
3.25	Propionaldehyde
3.26	Triethylamine
3.27	Butyl ethyl ether
3.27	Furan
3.27	iso-Propyl ether
3.27	tert-Amyl methyl ether
3.46	3-Chloropropene (Allyl chloride)
3.46	Iodomethane
3.54	iso-Butyraldehyde
3.60	Acetone
3.78	Ethyl formate
3.78	Methyl acetate
3.99	1-Chlorobutane
3.99	2,2-Dichloropropane
4.10	Acrolein
4.38	trans-1,2-Dichloroethylene
4.45	THF (Tetrahydrofuran)
4.56	1,1-Dichloropropene
4.72	Butyraldehyde
4.83	Methacrolein

Retention time	Compound
4.85	Carbon tetrachloride
4.85	1,1,1-Trichloroethane
4.95	1,2-Dichloropropane
4.97	Nonane
5.03	Ethyl acetate
5.03	Vinyl acetate
5.09	Acetal (Acetaldehyde diethyl acetal)
5.32	iso-Propyl acetate
5.35	2-Butanone (MEK; methyl ethyl ketone)
5.40	Methanol
5.40	tert-Butyl acetate
5.54	Methyl propionate
5.54	tert-Butanol
5.83	Setrahydropyran
5.93	Propyl formate
6.04	Allyl ether
6.04	Diglyme (Diethylene glycol dimethyl ether)
6.04	Glyme (Propylene glycol dimethyl ether)
6.15	3-Methyl-2-butanone
6.18	Methylene chloride
6.28	iso-Propanol
6.46	Benzene
6.46	Ethanol
6.61	3-Penten-2-one (Methyl vinyl ketone)
6.93	Ethyl propionate
6.97	Butyl ether
7.09	1,3-Dioxolane
7.20	1,2-Dichloroethane (Ethylene dichloride)
7.38	Propyl acetate
7.44	2,3-Butanedione (Diacetal)
7.44	2-Pentanone
7.44	3-Pentanone
7.46	Pentanal (Valerlaldehyde)
7.54	Methacrylonitrile
7.63	Decane
7.69	sec-Butyl acetate
7.72	Fluorobenzene
7.81	Acrylonitrile
7.84	cis-1,2-Dichloroethylene
7.84	Trichloroethylene
7.87	Ethyl acrylate
7.94	2,4-Dimethyl-3-pentanone
	(Diisopropyl ketone)
7.94	2-Methyl-3-pentanone
8.12	Acetonitrile
8.19	4-Methyl-2-pentanone
	(MIBK; Methyl isobutyl ketone)
8.36	iso-Butyl acetate
8.43	2-Methyl-2-butanol (tert-Amyl alcohol)
8.56	1-Penten-3-one (Ethyl vinyl ketone)
8.58	Chloroform
8.58	Setrachloroethylene
8.72	Propionitrile

Retention time	Compound
8.77	sec-Butanol
9.06	Toluene
9.07	Crotonaldehyde
9.10	1-Chlorohexane
9.10	1,1-Dichloroethane
9.11	2-Methyl-3-buten-2-ol
9.11	1-Propanol
9.17	Propyl propionate
9.26	Bromochloromethane
9.34	3-Hexanone
9.49	2,3-Pentanedione
9.65	1,4-Dioxane
9.71	1,1-Dichloropropane
9.85	Butyl acetate
10.04	2-Hexanone
10.07	Hexanal
10.10	Undecane
10.31	iso-Butanol
10.66	3-Pentanol
10.78	2-Propen-1-ol (Allyl alcohol)
10.94	2-Pentanol
10.96	Amyl acetate
10.96	iso-Amyl acetate
11.06	4-Heptanone
11.13	Ethylbenzene
11.26	4-Methyl-3-penten-3-one
11.27	cis-1,3-Dichloropropene
11.30	p-Xylene
11.40	5-Methyl-2-hexanone
11.44	m-Xylene
11.48	1-Butanol
11.66	3-Heptanone
11.69	Epichlorohydrin
11.76	Bromodichloromethane
11.77	1-Penten-3-ol
11.89	4-Methyl-2-pentanol
11.98	Dibromomethane
12.02	3-Buten-1-ol
12.03	2,6-Dimethyl-4-heptanone
	(Diisobutyl ketone)
12.05	2-Methylbutyl acetate
12.13	iso-Propylbenzene (Cumene)
12.23	Dodecane
12.24	Ethylene glycol monomethyl ether
12.25	2-Methoxyethanol (Methyl cellosolve)
12.27	2-Heptanone
12.32	Heptanal
12.38	1,3-Dichloropropane
12.38	5-Methyl-3-heptanone
12.39	o-Xylene
12.44	Pyridine
12.46	Cyclopentanone

DB-WAX - Retention (continued)

Retention time	Compound	Retention time	Compound	Retention time	Compound
12.49	3-Hexanol	15.31	1-Hexanol	19.48	Diethylene glycol monoethyl ether
12.55	4-Hexen-3-one	15.47	Bromobenzene	19.55	Benzonitrile
12.66	Pentyl ether	15.47	1,3-Diisopropylbenzene	19.61	Acrylic acid
12.73	2-Methyl-1-butanol (Active amyl alcohol)	15.61	4-Methylstyrene	19.70	Methyl benzoate
12.73	3-Methyl-1-butanol (iso-Amyl alcohol)	15.70	4-Hydroxy-4-methyl-2-pentanone	19.73	o-Tolualdehyde
12.78	trans-1,3-Dichloropropene	15.75	Tetradecane	19.77	m-Tolualdehyde
12.86	Propylbenzene	15.87	cis-3-Hexen-1-ol	19.80	1-Nonanol
12.95	2-Buten-1-ol (Crotyl alcohol)	16.05	Nonanal	19.90	Furfuryl alcohol
12.95	2-Hexanol	16.20	1,4-Diisopropylbenzene	20.03	1,2,4-Trichlorobenzene
13.00	Chlorobenzene	16.24	Ethylene glycol monobutyl ether	20.13	Acetophenone
13.11	2-Ethoxyethanol (Cellosolve)	16.31	2-Butoxyethanol (Butyl cellosolve)	20.13	p-Tolualdehyde
13.11	Ethylene glycol monoethyl ether	16.31	Cyclohexanol	20.27	Ethyl benzoate
13.41	tert-Butylbenzene	16.31	cis-2-Hexen-1-ol	20.57	1,2-Dibromo-3-chloropropane (DBCP)
13.47	iso-Butylbenzene	16.60	1,3-Dichlorobenzene	20.71	1-Methyl-2-pyrrolidone
13.54	1-Pentanol	16.87	Acetic acid	20.77	Triglyme (Triethylene glycol dimethyl ether)
13.55	1,3,5-Trimethylbenzene (Mesitylene)	16.91	1-Heptanol	20.96	1,3-Butanediol
13.62	Morpholine	17.00	Bromoform	21.01	Benzyl acetate
13.64	sec-Butylbenzene	17.00	trans-1,4-Dichloro-2-butene	21.12	1-Decanol
13.66	3-Octanone	17.06	1,4-Dichlorobenzene	21.25	1,2,3-Trichlorobenzene
13.80	1,2-Dibromoethane (EDB)	17.06	1,2,3-Trichloropropane	21.41	Nitrobenzene
13.80	Styrene	17.25	Benzaldehyde	21.46	Propyl benzoate
13.80	1,1,1,2-Tetrachloroethane	17.25	Glycidol	21.74	Diethylene glycol monobutyl ether
13.80	1,1,2-Trichloroethane	17.28	Pentadecane	21.92	3-Nitrotoluene
14.09	Tridecane	17.41	2-Ethyl-1-hexanol	22.00	a-Methylphenyl alcohol
14.20	2-Octanone	17.67	cis-4-Hepten-1-ol	22.08	1,2,4,5-Tetrachlorobenzene
14.27	1,2,4-Trimethylbenzene (Pseudocumene)	17.73	1,1,2,2-Tetrachloroethane	22.62	2-Nitrotoluene
14.29	3-Heptanol	17.77	trans-2-Hepten-1-ol	22.76	4-Phenyl-2-butanone (Benzyl acetone)
14.29	Octanal	17.80	1,2-Dichlorobenzene	22.82	Benzyl alcohol
14.31	2-Ethoxyethyl acetate	17.84	Hexachloro-1,3-butadiene	23.10	a-Ethylphenethyl alcohol
14.52	Chlorodibromomethane	18.18	Propionic acid	23.14	1,4-Butanediol
14.57	Cyclopentanol	18.19	4-Chlorostyrene	23.14	4-Nitrotoluene
14.61	Cyclohexanone	18.19	1,3,5-Trichlorobenzene	23.91	Diethylene glycol
14.65	2-Penten-1-ol	18.30	Iodobenzene	23.97	1-Chloro-4-nitrobenzene
14.71	2-Chlorotoluene	18.32	Furfural	24.12	b-Ethylphenethyl alcohol
14.71	2-Heptanol	18.40	1-Octanol	24.43	1,5-Pentanediol
14.81	Butylbenzene	18.70	2,3-Butanediol	25.09	Pentachlorobenzene
14.82	3-Methyl-2-buten-1-ol	18.70	Hexadecane	25.75	1,6-Hexanediol
14.90	3-Chlorotoluene	18.96	1,2-Propanediol (Propylene glycol)	26.14	2-Phenoxyethanol
14.90	4-Chlorotoluene	18.97	1,3-Propanediol	27.26	1,7-Heptanediol
15.13	a-Methylstyrene	19.06	Diethylene glycol monomethyl ether	29.06	1,8-Octanediol
15.13	4-tert-Butyltoluene	19.21	DMSO (Methyl sulfoxide)	30.41	Benzyl ether
15.16	2-Propyn-1-ol (Propargyl alcohol)	19.46	Styrene oxide	31.29	1,9-Nonanediol
15.25	DMF (Dimethylformamide)	19.47	Ethylene glycol	34.11	1,10-Decanediol
15.29	1,2,3-Trimethylbenzene (Hemimellitene)	19.47	Isophorone		

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