

2015

GS-Tek



Environment

GsBP™ GC Column
Applications

www.gs-tek.com



General Separation Technologies, Inc.

GS-Tek, a USA GC column manufacturer located in Delaware USA, offers complete GsBP™ GC column product line to worldwide chromatographers. Rooted in the original developer experiences of a major brand GC column started in 1990, and greatly re-engineered GC column process, GsBP™ GC columns have similar and improved performance to the major brand GC columns. Even though GsBP™ GC column is a new comer to market, GsBP™ GC columns gain market recognition from its similar and improved separations for many old and new applications.

Main features of GsBP™ GC columns

- Complete offers with robust, better quality and cost effectiveness, and confidence
- Similar performances and qualities to major brands
- Improved column selectivity and inertness for many challenging applications
- Quick turn-around customizations for method development

GS-Tek offers complete GsBP™ column selections for many petroleum and petrochemical applications, from pure gas, natural gas, petroleum oil to down stream chemicals and new fuels. GsBP™ columns have been widely used in petroleum and petrochemical industry to produce very good separations and quantitation results, as specified in ASTM, EN, UOP, GPA and other methods.

GS-Tek also offers the custom-made columns to meet your special separation requirements. GS-Tek will collaborate with you with quick deliver of the custom-made columns, many year experiences in column technology and GC instrumentation, to develop your method and to solve challenging analysis problems.

The followings demonstrate a few GsBP™ GC column applications. For more detailed application information, please contact our sales or customer support engineer or our world-wide distribution channel.

**We always like to hear
from you, work with
you and satisfy you
with our products and
our expertise.**

Water analysis:

Water: drinking water, high purity water, ground or surface water, underground water, sewage water, industrial waste water, moistures in soil, etc.

Water is a good solvent for most organic chemicals at low level, ppb or lower

VOCs and sVOCs are abundant in water

Inorganic contaminants also present in water

PH of water sample varies widely

Particulates are presented.

VOCs

Columns	Part No.	Similar Products	Applications
GsBP-VMS Low Bleed 60m x 0.25mm x 1.40um	6425-6014	122-1564	EPA 8260
GsBP-624, 20m x 0.18mm x 1.0um	6218-2010	121-1324	Fast VOCs Separations
GsBP-624, 60m x 0.32mm x 1.80um	6232-6018	123-1364, CP7415, CP7435	VOCs separations

Semi VOCs

Columns	Part No.	Similar Products	Applications
GsBP-5MS, 30m x 0.25mm x 0.25um	1525-3002	19091S-433, 122-5532, CP5860, CP8944	EPA 625, 1625, 8270
GsBP-5MS, 30m x 0.25mm x 0.50um	1525-3005	19091S-133, 122-5536, CP5871, CP8945	EPA 625, 1625, 8270
GsBP-5MS, 30m x 0.25mm x 1.00um	1525-3010	19091S-233, 122-5533, CP5862, CP8946	EPA 625, 1625, 8270
GsBP-5MS, 30m x 0.32mm x 0.25um	1532-3002	19091S-413, 123-5532, CP5863, CP8955	Fast Screen

Pesticide

Columns	Part No.	Similar Products	Applications
GsBP-5MS, 30m x 0.25mm x 0.25um	1525-3002	19091S-433, 122-5532, CP5860, CP8944	Fast separation
GsBP-5MS, 60m x 0.25mm x 0.25um	1525-6002	19091S-436, 122-5562, CP5861, CP8960	Comprehensive separation
GsBP-5MS, 30m x 0.32mm x 0.25um	1532-3002	19091S-413, 123-5532, CP5863, CP8955	Fast separation
GsBP-50+MS, 30m x 0.25mm x 0.25um	5025-3002	19091L-433, 122-1732, 122-4732, CP5817, CP7821, CP8982	Confirmation
GsBP-35MS, 30m x 0.25mm x 0.25um	3525-3002	19091G-133, 122-1932, 122-3832, CP8877	Confirmation
GsBP-1701, 30m x 0.25mm x 0.25um	6125-3002	122-0732, 122-7732, CP8712	Confirmation
GsBP-50MS, 30m x 0.25mm x 0.25um w/5m guard column	5025-3002-5	19091L-433, 122-1732, 122-4732, CP5817, CP7821, CP8982	Wide boiling point compounds

Volatile Halohydrocarbons

Columns	Part No.	Similar Products	Applications
GsBP-624, 30m x 0.32mm x 1.80um	6232-3018	19091R-316, 123-1334, CP7414, CP7434	601, 8010
GsBP-624, 60m x 0.32mm x 1.80um	6232-6018	123-1364, CP7415, CP7435	601, 8010

PCBs

Columns	Part No.	Similar Products
GsBP-5MS, 30m x 0.25mm x 0.25um	1525-3002	19091S-433, 122-5532, CP5860, CP8944
GsBP-5MS, 30m x 0.25mm x 0.25um w/5m guard column	1525-3502	19091S-433, 122-5532, CP5860, CP8944
GsBP-XLB 30m, 0.25mm, 0.25u	1625-3002	122-1232, CP8806

PAHs

Columns	Part No.	Similar Products
GsBP-5MS, 30m x 0.25mm x 0.25um	1525-3002	19091S-433, 122-5532, CP5860, CP8944
GsBP-1MS, 30m x 0.25mm x 0.25um	1125-3002	19091S-933, 122-0132, CP7860, CP8912
GsBP-5MS, 30m x 0.25mm x 0.25um w/5m guard column	1525-3502	19091S-433, 122-5532, CP5860, CP8944
GsBP-XLB, 30m x 0.25mm x 0.25um	1625-3002	122-1232, CP8806

EPA 8270

Columns	Part No.	Similar Products
GsBP-5MS, 30m x 0.25mm x 0.25um	1525-3002	19091S-433, 122-5532, CP5860, CP8944
GsBP-5MS, 30m x 0.25mm x 0.50um	1525-3005	19091S-133, 122-5536, CP5871, CP8945

EPA 502.2

Columns	Part No.	Similar Products
GsBP-502.2 20m x 0.18mm x 1.0um	6318-2010	
GsBP-502.2 60m x 0.25mm x 1.4um	6325-6014	
GsBP-502.2 60m x 0.32mm x 1.8um	6332-6018	123-1464

EPA 1614, PBDE

Columns	Part No.	Similar Products
GsBP-5MS, 15m x 0.25mm x 0.10um	1525-1501	19091S-331, 122-5511, CP8938
GsBP-5MS, 30m x 0.25mm x 0.10um	1525-3001	19091S-333, 122-5531, CP5870, CP8943

CFCs

Columns	Part No.	Similar Products
GsBP-PLOT GasPro, 30m x 0.32mm x 5.0um	8532-3005	113-4332, CP8567

Organic Mercury Compound

Columns	Part No.	Similar Products
GsBP-5MS, 30m x 0.25mm x 0.25um	1525-3002	19091S-433, 122-5532, CP5860, CP8944

Water Analysis

Columns	Part No.	Similar Products
GsBP-624, 60m x 0.32mm x 1.80um	6232-6018	123-1364, CP7415, CP7435
GsBP-VMS Low Bleed 20m x 0.18mm x 1.0um	6418-2010	121-1524
GsBP-VMS Low Bleed 60m x 0.25mm x 1.40um	6425-6014	122-1564, CP9103

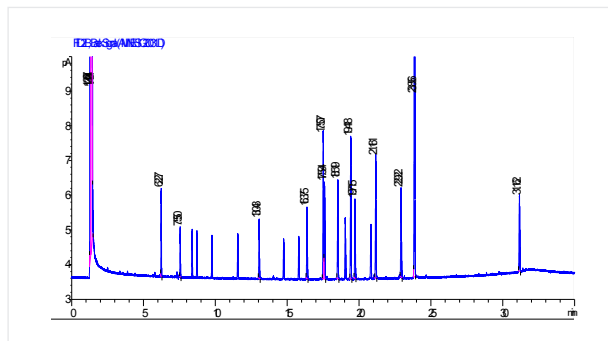
NOISH

Columns	Part No.	Similar Products
GsBP-624, 25m 0.18mm x 1.0um	6218-2510	
GsBP-5MS, 30m x 0.25mm x 0.25um	1525-3002	19091S-433, 122-5532, CP5860, CP8944
GsBP-INOWAX, 30m x 0.25mm x 0.25um	2025-3002	19091N-133, 122-7032, 122-7332, CP8713
GsBP-1MS, 30m x 0.25mm x 0.25um	1125-3002	19091S-933, 122-0132, CP7860, CP8912

Examples of application:

1. 22 Chlorinated Pesticides

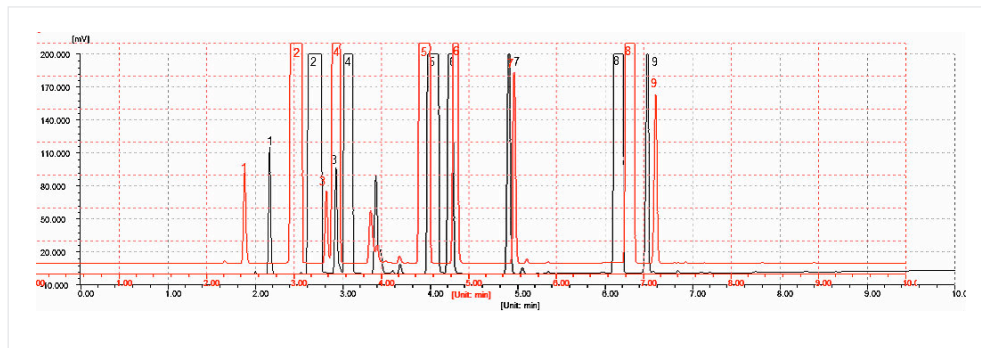
Column: GSBP-50+MS, 30m x 0.25mm x 0.25um (5025-3002) vs DB-17 30m x 0.25mm x 0.25um (122-1732)



- | | | | |
|----|-------------------------------------|----|------------------------|
| 1 | 2, 4, 5, 6-Tetrachloro-m-xylene(IS) | 12 | Dieldrin |
| 2 | α-BHC | 13 | p, p'-DDE |
| 3 | β-BHC | 14 | Endrin |
| 4 | γ-BHC | 15 | Endosulfan II |
| 5 | δ-BHC | 16 | p, p'-DDD |
| 6 | Heptachlor | 17 | Endrin aldehyde |
| 7 | Aldrin | 18 | Endosulfan sulfate |
| 8 | Heptachlor epoxide | 19 | p, p'-DDT |
| 9 | γ-Chlordane | 20 | Endrin ketone |
| 10 | Endosulfan I | 21 | Methoxychlor |
| 11 | α-Chlordane | 22 | Decachlorobiphenyl(IS) |

2. 9 Haloalkanes

Column: GsBP-1701, 30m x 0.32mm x 1.0um (6132-3010) vs DB-1701, 30m x 0.32mm x 1.0um (123-0733)



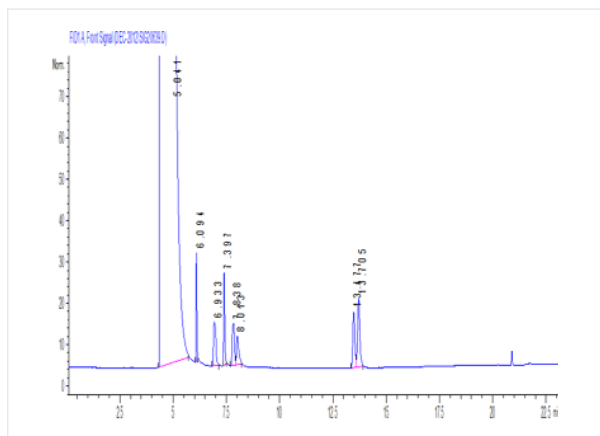
Peak name: Dichloromethane, 1, 2- Dichloroethane, Carbon tetrachloride, Trichloroethylene, 1, 1, 2- Trichloroethane, Tetrachloroethylene, 1, 1, 1- trichloroethane, tetrachloroethane, 1, 2, 3 – trichloropropane.



3.PPM level Residual Solvents on GSBP-624 Columns, good column inertness

Column: GsBP-624, 30m x 0.32mm x 1.8um

Oven: 50C

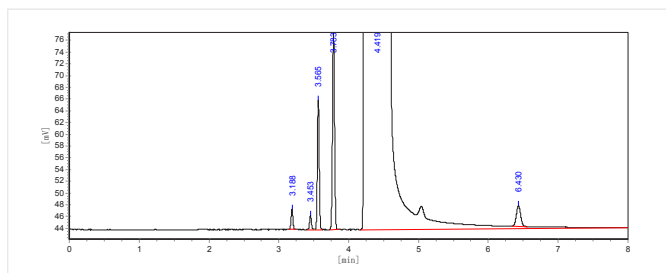


Peak	Name	Conc	RT
1	Methanol	Solvent	5.04
2	Ethanol	10ppm	6.09
3	Acetone	10ppm	6.93
4	Isopropanol	10ppm	7.4
5	Acetonitrile	10ppm	7.84
6	Dichloromethane	10ppm	8.01
7	2-Butanone	10ppm	13.48
8	Ethyl Acetate	10ppm	13.71

4.Bromomethane/Halogens

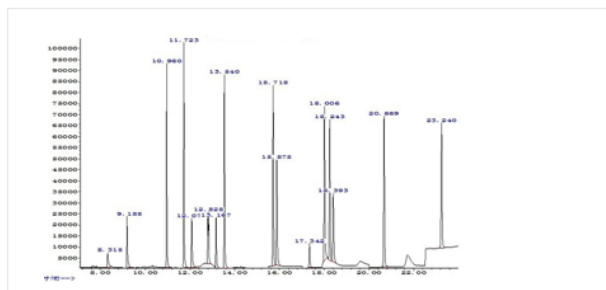
Column: GsBP-624, 30m x 0.32mm x 1.8um

Oven: 45C



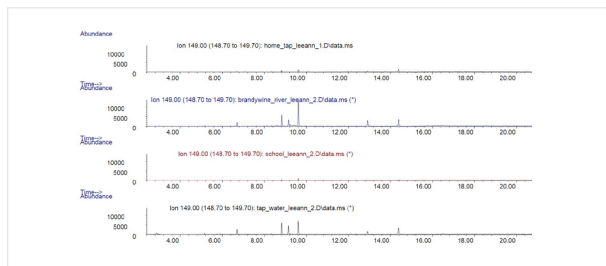
5.Pthalates on GsBP-5MS by GC-MS

Column: GsBP-5MS, 30m x 0.25mm x 0.25um

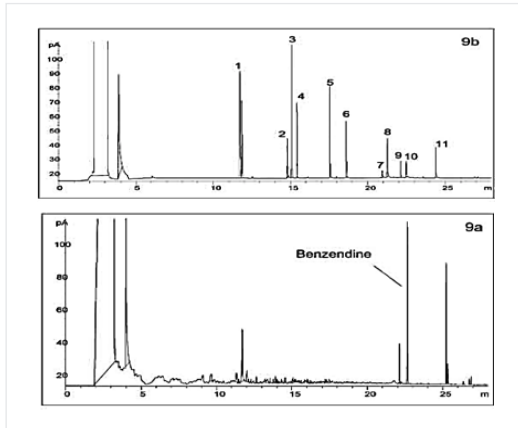


6.phthalate in 4 water samples

Column: GsBP-5MS, 30m x 0.25mm x 0.25um

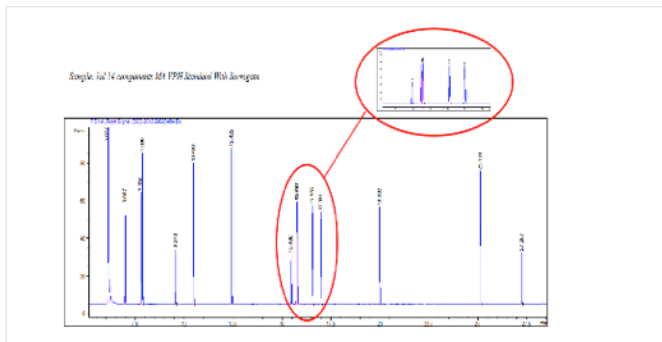


7. Excellent Column Inertness for Base, Acid and Neutral EPA 8270 GsBP-5MS

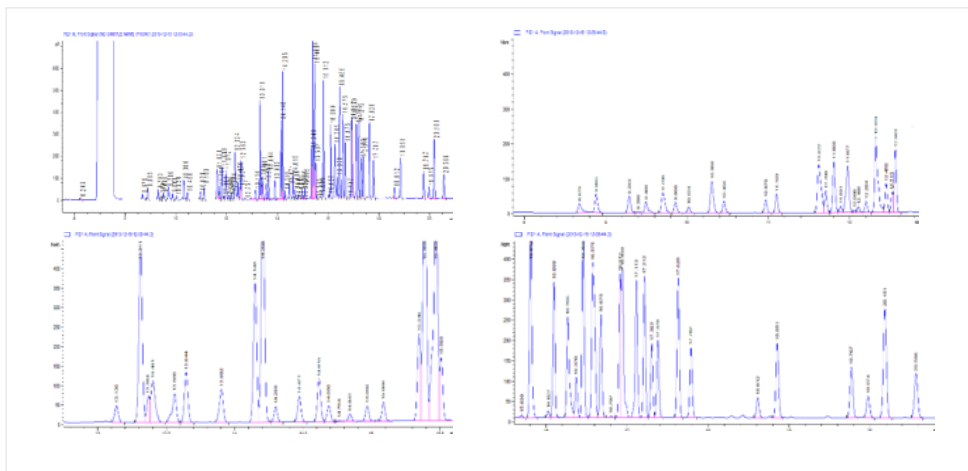


Peak Name	RT(min)	Resolution
Methanol	5.984	
Pentane	6.578	
MTBE	7.057	
2-methylpentane	7.115	2.38
Benzene	8.272	
Iso-Octane	8.917	
Toluene	10.605	
Ethylbenzene	13.965	
m-Xylene	14.32	1.2
p-Xylene	14.368	
o-Xylene	15.47	
Nonane	16.136	

8.14 VPHs on GsBP-PONA Column, BTEX



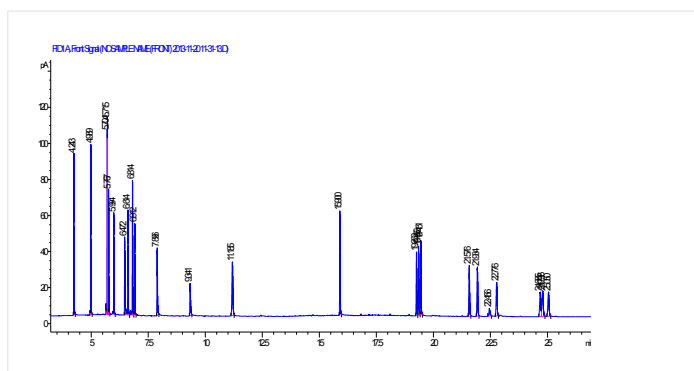
9. EPA 8260



Peak	Compound	RT	Peak	Compound	RT
1	Vinyl chloride	6.246	42	Ethyl methacrylate	14.686
2	Diethyl ether (ethyl ether)	8.679	43	1, 1, 2-Trichloroethane	14.764
3	1, 1-Dichloroethene	8.885	44	Tetrachloroethene	14.841
4	1, 1, 2-Trichlorotrifluoroethane (CFC-113)	9.293	45	1, 3-Dichloropropane	14.966
5	Iodomethane (methyl iodide)	9.399	46	Dibromochloromethane	15.026

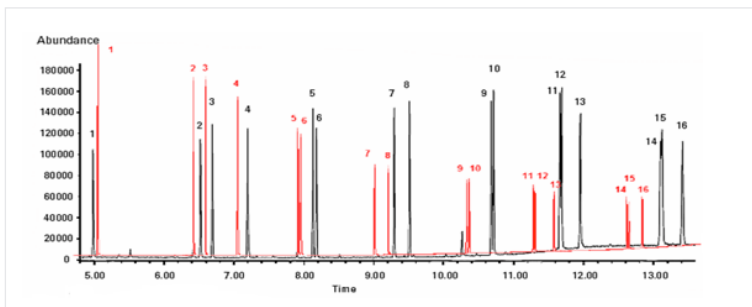
6	Carbon disulfide	9.498	47	1, 2-Dibromoethane (EDB)	15.085
7	Acetonitrile	9.706	48	Chlorobenzene	15.346
8	Allyl chloride (3-chloropropene)	9.86	49	Ethylbenzene	15.388
9	Methylene chloride (dichloromethane)	10.024	50	1, 1, 1, 2-Tetrachloroethane	15.388
10	Acrylonitrile	10.306	51	m-Xylene	15.469
11	trans-1, 2-Dichloroethene	10.456	52	p-Xylene	15.469
12	1, 1-Dichloroethane	10.97	53	o-Xylene	15.507
13	Chloroprene (2-chloro-1, 3-butadiene)	11.103	54	Styrene	15.507
14	cis-1, 2-Dichloroethene	11.621	55	Bromoform	15.562
15	2, 2-Dichloropropane	11.621	56	Isopropylbenzene (cumene)	15.699
16	Propionitrile	11.708	57	cis-1, 4-Dichloro-2-butene	15.812
17	Methyl acrylate	11.708	58	1-Bromo-4-fluorobenzene (BFB)	16.027
18	Methacrylonitrile	11.808	59	1, 1, 2, 2-Tetrachloroethane	16.099
19	Bromochloromethane	11.891	60	trans-1, 4-Dichloro-2-butene	16.265
20	Tetrahydrofuran	11.977	61	Bromobenzene	16.37
21	Chloroform	12.06	62	1, 2, 3-Trichloropropane	16.37
22	1, 1, 1-Trichloroethane	12.109	63	n-Propylbenzene	16.455
23	Dibromofluoromethane	12.109	64	2-Chlorotoluene	16.575
24	Carbon tetrachloride	12.204	65	1, 3, 5-Trimethylbenzene	16.675
25	1, 1-Dichloropropene	12.324	66	4-Chlorotoluene	16.797
26	1, 2-Dichloroethane-d4	12.45	67	tert-Butylbenzene	16.912
27	Benzene	12.524	68	Pentachloroethane	16.939
28	1, 2-Dichloroethane	12.563	69	1, 2, 4-Trimethylbenzene	17.113
29	Isobutyl alcohol (2-methyl-1-propanol)	12.751	70	sec-Butylbenzene	17.212
30	Trichloroethene	13.136	71	4-Isopropyl toluene (p-Cymene)	17.303
31	1, 2-Dichloropropane	13.311	72	1, 3-Dichlorobenzene	17.303
32	Methyl methacrylate	13.369	73	1, 4-Dichlorobenzene	17.378
33	1, 4-Dioxane	13.401	74	n-Butylbenzene	17.628
34	Dibromomethane	13.56	75	1, 2-Dichlorobenzene	17.787
35	2-Chloroethanol	13.644	76	1, 2-Dibromo-3-chloropropane (DBCP)	18.612
36	Bromodichloromethane	13.903	77	Nitrobenzene	18.851
37	2-Nitropropane	14.148	78	1, 2, 4-Trichlorobenzene	18:24
38	cis-1, 3-Dichloropropene	14.205	79	Hexachloro-1, 3-butadiene	19.975
39	Toluene-d8	14.299	80	Naphthalene	20.181
40	Toluene	14.471	81	1, 2, 3-Trichlorobenzene	20.566
41	trans-1, 3-Dichloropropene	14.615			

10.Azo dyes GsBP-5MS 30m x 0.25mm x 0.25um



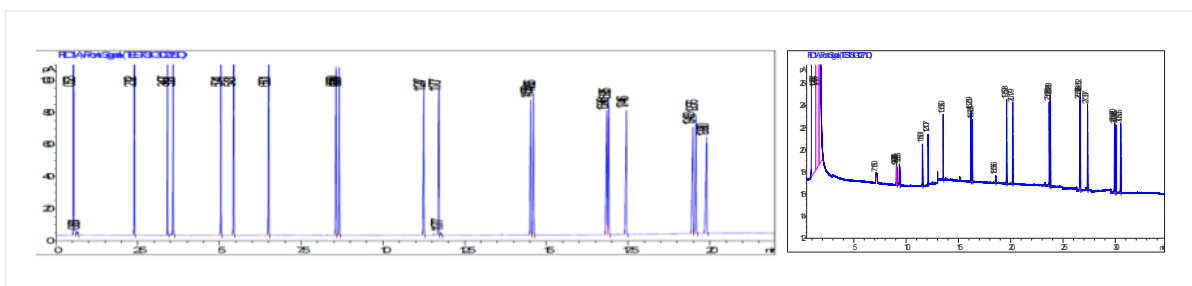
1	Aniline	9	2,4,5-Trimethyl aniline	17	3,3'-dichloro-4,4'-diaminodiphenyl methane
2	1,4-phenylenediamine	10	2-Methyl-4-chloroaniline	18	4,4'-diaminodiphenyl methane
3	2-Methylaniline	11	2,4-diaminotoluene	19	3,3'-dimethyl-4,4'-diaminodiphenyl methane
4	2,4-Dimethylaniline	12	2,4-diaminoanisole	20	3,3'-dimethylbenzidine
5	2,6-Dimethylaniline	13	2-Naphthylamine	21	4,4'-diaminodiphenyl sulfide
6	O-anisidine / 2-methoxyaniline	14	4-aminobiphenyl	22	3,3'-dichloro-benzidine
7	4-Chloroaniline	15	4-AMINOPHENYL ETHER	23	3,3'-dimethoxybenzidine
8	2-methoxy-5-methylaniline	16	Benzidine		

11. PAHs, 17, GsBP-5MS 30m x 0.25mm x 0.25um



- | | |
|-----------------------|-----------------------------|
| 1. Naphthalene | 12 Benzo(k)anthracene |
| 2. Acenaphthylene | 13 Benzo(a)pyrene |
| 3. Acenaphthene | 14 Indeno(1, 2, 3-cd)pyrene |
| 4. Fluorene | 15 Dibenz(a, h)anthracene |
| 5. Phenanthrene | 16 Benzo[ghi]Pyrene |
| 6. Anthracene | |
| 7. Fluoranthene | |
| 8. Pyrene | |
| 9. Benz(a)anthracene | |
| 10. Chrysene | |
| 11. Benz(b)anthracene | |

12.18 PAHS Quick Separation, GsBP-PAH, 0.18mmx20m

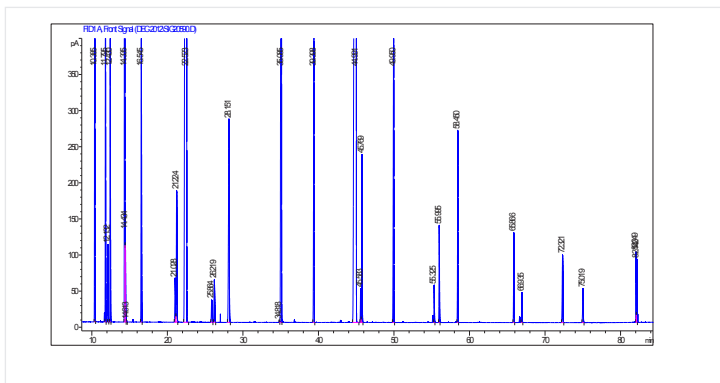


13. Dioxins , GsBP-5MS 60m x 0.25mm x 0.25um



14. Benzene and Ethanol

Column: GsBP-PONA, 100m x 0.25mm x 0.5um

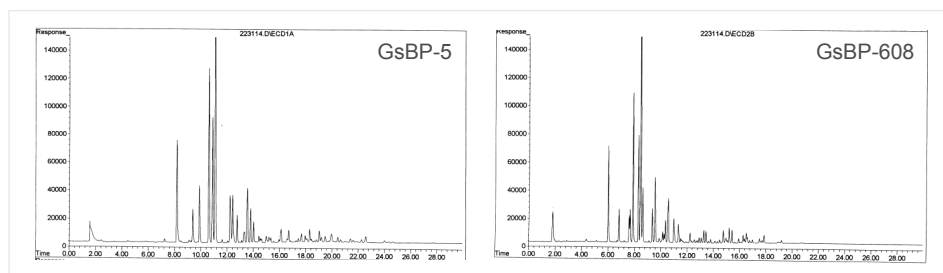


- | Peak No. | Compound |
|----------|--------------------------------|
| 1 | Ethanol |
| 2 | Pentane |
| 3 | Tert-butanol |
| 4 | 2-methylbutene-2 |
| 5 | Methyl tert-butyl ether (MTBE) |
| 6 | 2, 3-dimethylbutane |
| 7 | Hexane |
| 8 | 1-methylcyclopentene |
| 9 | Benzene |
| 10 | Cyclohexane |
| 11 | 3-ethylpentane |
| 12 | 1-tert-2-dimethylcyclopentane |
| 13 | Heptane |

15. Aroclor 1221

Column 1: 1553-3015, GsBP-5MS, 30m x 0.53mm x 1.5um

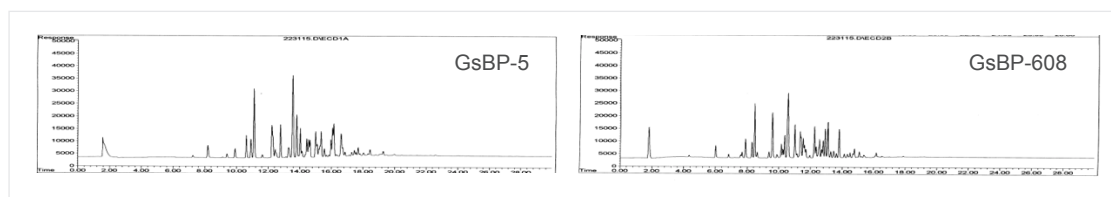
Column 2: 5253-3005, GsBP-608, 30m x 0.53mm x 0.5um



16. Aroclor 1232

Column 1: 1553-3015, GsBP-5MS, 30m x 0.53mm x 1.5um

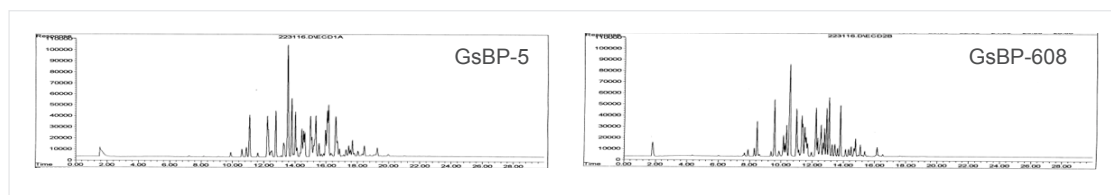
Column 2: 5253-3005, GsBP-608, 30m x 0.53mm x 0.5um



17. Aroclor 1242

Column 1: 1553-3015, GsBP-5MS, 30m x 0.53mm x 1.5um

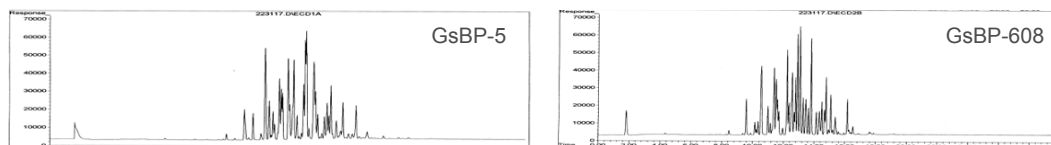
Column 2: 5253-3005, GsBP-608, 30m x 0.53mm x 0.5um



18. Aroclor 1248

Column 1: 1553-3015, GsBP-5MS, 30m x 0.53mm x 1.5um

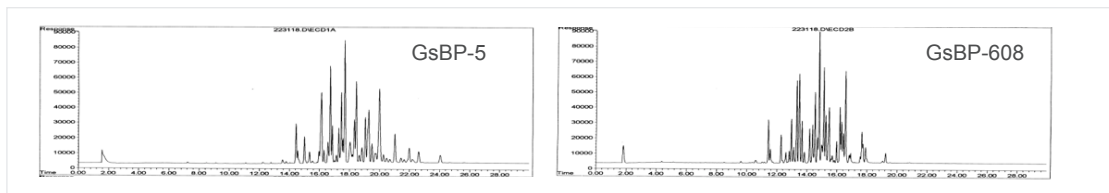
Column 2: 5253-3005, GsBP-608, 30m x 0.53mm x 0.5um



19.Aroclor 1254

Column 1: 1553-3015, GsBP-5MS, 30m x 0.53mm x 1.5um

Column 2: 5253-3005, GsBP-608, 30m x 0.53mm x 0.5um



Conclusion:

Above applications have demonstrated that GsBP™ GC columns have produced very good separations for most petroleum and petrochemical applications and help you to provide quality products to your customers.

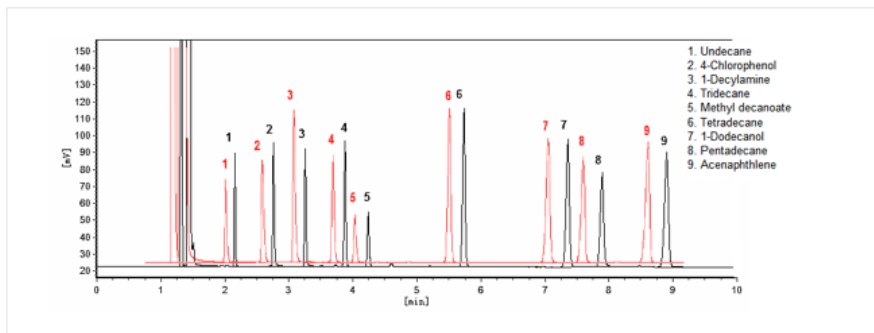
Gs-Tek hope you will soon experience Quality and Performance of GsBP™ column for your applications.

GsBP™ GC Column Quality Practices

Each GsBP™ column is gone extensive quality and performance tests to ensure high quality and performances with internal specifications. The following are comparisons of GsBP standard test to JW columns.

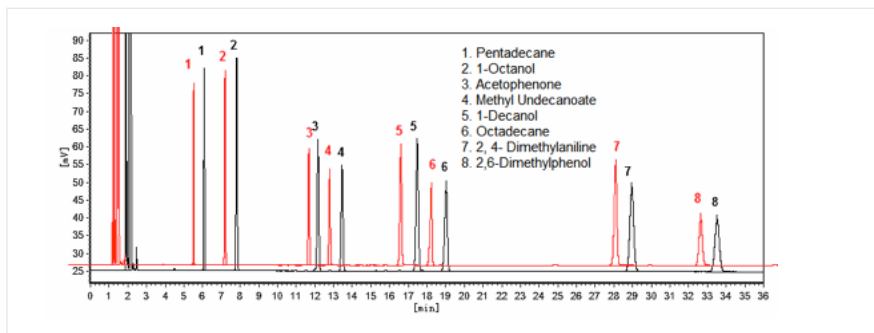
1.GsBP-5 Columns

Columns: GsBP-5, 30m x 0.25mm x 0.25um (0532-3002) (Red) vs HP-5, 30m x 0.25mm x 0.25um (19091J-433) (Black)



2.GsBP-Inowax Columns

Columns: GsBP-Inowax (Red) 30m x 0.25mm x 0.25um (2025-3002) vs HP-INNOWax (Black), 30m x 0.25mm x 0.25um (19091N-113)



Acknowledgement:

GS-Tek special thanks the following customers for their evaluation feedbacks:

Huixing Wang, Senior Engineer of Quality Inspection Center, Sinopec Zhenhai Refining & Chemical Company, Zhejiang, China

Haibo He, Director of Hainan environmental testing Center, Hainan, China

Wei Liao, Manager of CTI Co., Ltd, Zhejiang, China

Mr. Li, Lab manager, Shanghai Institute of Food and Drug Control, Shanghai, China

Dr. Yongtan Yang, Technical Manager of Analysis Lab, Ex-Beijing Research Institute of Chemical, Beijing, China

Naizhong Zou, Beijing Chrom Institute, PIONA Analysis, Beijing, China

Zhihong Lin, Application Manager of Fuli Analytical Instrument Co., Ltd, Zhejiang, China

GC column Specified in ASTM Methods for Most Petroleum and Petrochemical Analyses

Method	Sample	Column	Description
D1945	Natural Gas	8453-1550	GsBP-PLOT MS5A, 15m X 0.53mm X 50um
		8653-1530	GsBP-PLOT Q, 15m X 0.53mm X 30um
D1946	Reformed Gas	8453-1550	GsBP-PLOT MS5A, 15m X 0.53mm X 50um
		8653-1530	GsBP-PLOT Q, 15m X 0.53mm X 30um
D2163	Liquefied Petroleum Gas And Propene Concentrates	8153-3015	GsBP-PLOT Al ₂ O ₃ , KCL, 30m X 0.53mm X15um
		8253-3015	GsBP-PLOT Al ₂ O ₃ , "S", 30m X 0.53mm X15um
D2306	C8 Aromatics	2032-6002	GsBP-Inowax, 60m X 0.32mm X 0.25um
D2360	Trace Impurities In Monocyclic Aromatic Hydrocarbons And Total Aromatic Determination	2032-6002	GsBP-Inowax, 60m X 0.32mm X 0.25um
D2426	Butadiene Dimer And Styrene In Butadiene Concentrates	0153-3015	GsBP-1, 30m X 0.53mm X 1.5um
D2427	Deteremination Of C2 Through C5 Hydrocarbons In Gasoline	8153-3015	GsBP-PLOT Al ₂ O ₃ , KCL, 30m X 0.53mm X15um
		8253-3015	GsBP-PLOT Al ₂ O ₃ , "S", 30m X 0.53mm X15um
D2504	Noncondensable Gases In C2 And Lighter Hydrocarbons	8453-3050	GsBP-PLOT MS5A, 30m X 0.53mm X 50um
D2505	Other Hydrocarbons, And Carbon Dioxide In High-Purity Ethylene	8353-5015	GsBP-PLOT Al ₂ O ₃ , "M", 50m X 0.53mm X15um
		0153-3050	GsBP-1, 30m X 0.53mm X 5.0um
D2593	Butadiene Purity And Hydrocarbon Impurities	8253-5015	GsBP-PLOT Al ₂ O ₃ , "S", 50m X 0.53mm X15um
D2712	Hydrocarbon Traces In Propylene Conetrates	8253-5015	GsBP-PLOT Al ₂ O ₃ , "S", 50m X 0.53mm X15um
D2804	Purity Of Methyl Ethyl Ketone (MEK)	2053-3010	GsBP-Inowax, 30m X 0.53mm X 1.0um
D2887	Boiling Range Distribution Of Petroleum	0153-1026	GsBP-1, 10m X 0.53mm X 2.65um
	Extended Boiling Range Distribution Of Petroleum	0153-0508	GsBP-1, 5m X 0.53mm X 0.88um
D3054	Impurities In Cyclohexane	0132-5005	GsBP-1, 50m X 0.32mm X 0.52um
D3329	Purity Of Methyl Isobutyl Ketone	2053-6010	GsBP-Inowax, 60m X 0.53mm X 1.0um
D3524	Diesel Fuel Diluent Used In Diesel Engine Oil	0153-1008	GsBP-1, 10m X 0.53mm X 0.88um
D3710	Boiling Range Distribution Of Gasoline And Gasoline Fractions	0153-0750	GsBP-1, 7.5m X 0.53mm X 5.0um
D3760	Analysis Of Isopropylbenzene (Cumene)	2032-6002	GsBP-Inowax, 60m X 0.32mm X 0.25um
		0132-6005	GsBP-1, 50m X 0.32mm X 0.5um

D3797	Analysis Of O-Xylene	2032-6005	GsBP-Inowax, 60m X 0.32mm X 0.5um
D3798	Analysis Of P-Xylene	2032-6005	GsBP-Inowax, 60m X 0.32mm X 0.5um
D4415	Determination Of Dimer In Acrylic Acid	2132-3002	GsBP-FFAP, 30m X 0.32mm X 0.25um
D4424	Butylene Analysis	8253-5015	GsBP-PLOT Al2O3,"S", 50m X 0.53mm X15um
D4492	Analysis Of Benzene	2032-6002	GsBP-Inowax, 60m X 0.32mm X 0.25um
D4735	Trace Thiophene In Refined Benzene	2153-3010	GsBP-FFAP, 30m X 0.53mm X 1.0um
D4815	MTBE, ETBE, TAME, DIPE, Tert- Amyl Alcohol, C1-C4 Alcohols In Gasoline	0153-3050-D4815	GsBP-1, 30m X 0.53mm X 5.0um
		9999-D4815-2	Packed Column, 2m X 1/8 SS, 25% TCEP On Chromsorb P-AW 80/100mesh
D4864	Traces Of Methanol In Propylene	0553-1515	GsBP-5, 15m X 0.53mm X 1.5um
D5008	Ethyl Methyl Pentanol Content And Purity Of 2-Ethylhexanol	0153-1050	GsBP-1, 10m X 0.53mm X 5.0um
		2032-3002	GsBP-Inowax, 30m X 0.32mm X 0.25um
D5060	Impurities In High-Purity Ethylbenzene	2032-6005	GsBP-Inowax, 60m X 0.32mm X 0.5um
D5134	Impurities In High-Purity Ethylbenzene	9002-PONA	GsBP-PONA, 50m X 0.20mm X 0.5um
D5135	Styrene Analysis	2032-6005	GsBP-Inowax, 60m X 0.32mm X 0.5um
D5274	1,3-Butadiene Analysis	8253-5015	GsBP-PLOT Al2O3,"S", 50m X 0.53mm X15um
D5310	Tar Acid Composition	6620-2502	GsBP-5, 25m X 0.20mm X 0.20um
D5399	Boiling Point Distribution Of Hydrocarbon Solvents	0153-1030	GsBP-5, 10m X 0.53mm X 3.0um
D5441	Analysis Of Methyl T-Butyl Ether (MTBE)	9006-PONA	GsBP-PONA, 100m X 0.25mm X 0.5um
		9002-PONA	GsBP-PONA, 50m X 0.20mm X 0.5um
D5442	Analysis Of Petroleum Waxes	1125-3002	GsBP-1MS, 30m X 0.25mm X 0.25um
		0525-1502	GsBP-5, 15m X 0.25mm X 0.25um
D5480	Engine Oil Volatility By GC	0153-6050	GsBP-1, 60m X 0.53mm X 5.0um
D5501	Ethanol Content Of Denatured Fuel Ethanol	9006-PONA	GsBP-PONA, 100m X 0.25mm X 0.5um
D5599	Oxygenates In Gasoline By GC And Oxygen Selective Flame Ionization Detector	0125-6010	GsBP-1, 60m X 0.25mm X 1.0um
D5623	Sulfur Compounds In Light Petroleum Liquids By GC And Sulfur Selective Detection	0132-3040	GsBP-1, 30m X 0.32mm X 4um
D5713	Analysis Of High-Purity Benzene For Cyclohexane Feedstock By Capillary GC	9002-PONA	GsBP-PONA, 50m X 0.20mm X 0.5um
D5769	Determination Of Benzene, Toluene And Total Aromatics In Finished Gasoline By GC/MS	1125-6010	GsBP-1MS, 60m X 0.25mm X 1.0um
		0132-6050	GsBP-1, 60m X 0.32mm X 5.0um
D5917	Trace Impurities In Monocyclic Aromatic Hydrocarbons By GC And External Calibration	2032-6002	GsBP-Inowax, 60m X 0.32mm X 0.25um
D6144	Alpha-Methylstyrene By Capillary GC	1125-6010	GsBP-1MS, 60m X 0.25mm X 1.0um
D6159	Hydrocarbon Impurities In Ethylene	8353-5015	GsBP-PLOT Al2O3,"M", 50m X 0.53mm X15um
		0153-3050	GsBP-1, 30m X 0.53mm X 5.0um

Consumables for most Petroleum and Petrochemical Applications

Ferrule

Cat. No.	Description	Cross-Reference P/N
C0211164	0.4 Mm ID Graphite Ferrule For Agilent GC Inlet (10pk)	5181-3322
C0211165	0.5 Mm ID Graphite Ferrule For Agilent GC Inlet (10pk)	5080-8853
C0211168	0.8 Mm ID Graphite Ferrule For Agilent GC Inlet (10pk)	500-2118
C0211104	1/16" To 0.4 Mm Graphite Ferrule (10pk)	

C0211105	1/16" To 0.5 Mm Graphite Ferrule (10pk)	
C0211108	1/16" To 0.8 Mm Graphite Ferrule (10pk)	
C0213104	1/16" To 0.4 Mm V/G Ferrule (10pk)	5062-3508
C0213105	1/16" To 0.5 Mm V/G Ferrule (10pk)	5062-3506
C02131XX	1/16" Blank V/G Ferrule (10pk)	5181-3308
CSG073220	SILTITE FERRULE 0.25 COL PK10	5188-5361
CSG073221	SILTITE FERRULE 0.32 COL PK10	5188-5362
CSG073222	SILTITE FERRULE 0.53 COL PK10	5188-5363
CSG073223	SILTITE FERRULE 1/16" PK10	
9010-0020	Column Nut 2/PK	5181-8830
9010-0030	Column Nut For MS Interface	05988-20066
9010-0040	Column Wrench 2/Pk 1/4 And 5/16	8710-0510
9010-0050	Column Cage, 2/Pk, 150mm Diameter	
9010-0060	Column Cutter 5/Pk	

Inlet Septa

Cat. No.	Description	Cross-Reference P/N
C0298718	Septa BTO 11 Mm (7/16") Centerguide (100pk)	5183-4547-100
C0246228	Septa Ag3 11 Mm (7/16") Centerguide (100pk)	5183-4759-100
C0298787	Septa BTO 5 Mm Centerguide (50pk)	5183-4758

Inlet Liner

Cat. No.	Description	Cross-Reference P/N
CSG092001	LINER Agilent 4mm ID QW PKT5	5190-3164
CSG092002	LINER Agilent 4mm ID FOCUS PKT5	210-4004-5
CSG092003	LINER Agilent 4mm ID TAPFOCUS PKT5	210-4022-5
CSG092004	LINER Agilent QTZ 2mm ID STRGT PKT5	5183-4707
CSG092005	LINER Agilent 2.3mm ID FOCUS PKT5	
CSG092007	LINER Agilent 4mm ID STRGT PKT5	5183-4691
CSG092010	LINER Agilent 4mm ID GN QW PKT5	
CSG092011	LINER Agilent 4mm ID TAPFOCUS PKT25	
CSG092013	LINER Agilent 2mm ID GN PKT5	
CSG092016	LINER Agilent 1.2mm ID STRGT PKT5	5183-4709
CSG092017	LINER Agilent 4mm ID TAPER PKT5	5183-4701
CSG092018	LINER Agilent 4mm ID DBLTAP PKT5	5183-4705
CSG092019	LINER Agilent 4mm ID TAPER QW PKT 5	5183-4693
CSG092111	LINER Agilent 2.3mm IDFOCUS PKT5	210-4022-5
CSG092234	Agilent LINER PACKED COL PKT5	5183-4691
CSG092246	LINER AGILENT PTV STRGT PKT 5	5183-2037

CSG092243	LINER GE LVI PKT5	5190-1426
CSG092210	LINER AC PTV INJ PKT5 (UNTRD)	
CSG0726005	GRAPHITE O-RING 6.35MM PKT10	5180-4173
C0216973	Viton O-Rings for Agilent Capillary Inj. Liners (12pk)	5188-5365
C0486310	Glass Wool Inserter	
C0486313	Glass Wool Puller	
C0486315	Glass Wool (50 g)	

Inlet gold plate seal

Cat. No.	Description	Cross-Reference P/N
COV4300	0.8mm Inlet Seal, Gold-plated, For Agilent Systems, Splitless, w/GP Washers, 2/pk	5188-5367
COV4300-10	0.8mm Inlet Seal, Gold-plated, For Agilent Systems, Splitless, w/GP Washers, 10/pk	5190-2209
COV4400	0.8mm Inlet Seal, Gold-plated, For Agilent, Split Double Groove w/GP Washers, 2/pk	5182-9652
COV4400-10	0.8mm Inlet Seal, Gold-plated, For Agilent, Split Double Groove w/GP Washers, 10/pk	
COV4850	Replacement Stainless Steel Washers for Inlet Seal, 12/pk	18740-20880

Jet

Cat. No.	Description	For
g1531-80560	Jet, Capillary Optimized, 0.29mm ID	6890/7890
19244-80560	Jet, Adaptable, capillary, 0.29mm ID	6890/7890
g1531-80620	Jet, Cap Optimized, high temp, 0.47mm ID	SimDIs
19244-80620	Jet, Adapt, high temp capillary, 0.47mm ID	SimDIs

Gas Purifier

Cat. No.	Description	Cross-Reference P/N
C0202232-B	Zpure Hc Purifier, 1/8" Brass Fittings	Ht-200-2
C0202232xl-B	Zpure XI Hc Purifier - 1/8"	Bht-2
C0202230-B	Zpure H2o Purifier, 1/8" Brass Fittings	Mt200-2
C0202230xl-B	Zpure XI H2o Purifier - 1/8"	Bmt-2
C0202234-B	Zpure Glass Moisture Trap, 1/8", Brass	Mt200-2-S
C0202256-B	Zpure Glass H2o/Hc Purifier 1/8"	Hmt200-2
C0202216-B	Zpure O2 Purifier, 1/8" Brass Fittings	Bot-2
C0202236-B	Zpure Glass Indicating Oxygen Trap, 1/8" Brass	lot-2-Hp
C0202206-B	Zpure Dual Purifier, 1/8" Brass Fittings	Ot3-2

Vial

Cat. No.	Description	Volume
CAG5182-0553	Screw cap and clear vial kit 100/PK	2ml
CAG5182-0558	AsmKit AmbWrt Vial GrnCap PTFE/Si 100/pk	2ml
C0123135	1.8 mL Amber Screw Top Combo Pack w/ Preassem Caps (100pk)	2ml

C0123225	1.8 mL Clear Screw Top Std. Mouth Vial Combo Pack (100pk)	2ml
C05A11C0	6.4V Electronic Crimper Tool 11mm	2ml
C05A11D0	6.4V Electronic Decapper Tool 11mm	2ml

Syringes for Agilent Auto sampler

Cat. No.	Description	Volume	Cross-Reference P/N
CSG000400	0.5BR-AG-0.47 0.5UL SYRINGE	0.5ul	
CSG000410	0.5BR-AG-0.63 0.5UL SYRINGE	0.5ul	G4513-80229
CSG000415	0.5BR-AG-0.63/0.47 0.5UL SYRINGE	0.5ul	
CSG000610	1BR-AG-0.63 1UL SYRINGE	1ul	
CSG001804	SK-5F-AG-0.47 5UL 6PK SYRINGE	5ul	9301-0891
CSG001814	SK-5F-AG-0.63 5UL 6PK SYRINGE	5ul	9301-0892
CSG001822	SK-5F-AG-63/47 5UL 6PK SYRINGE	5ul	5181-8810
CSG002804	SK-10F-AG-47 10UL 6PK SYRINGE	10ul	G4513-80211
CSG002814	SK-10F-AG-63 10UL 6PK SYRINGE	10ul	9301-0725
CSG002822	SK-10F-AG6347 10UL 6PK SYRINGE	10ul	5181-3360
CSG002827	SK-10F-AG-GT-63/47 6PK SYRINGE	10ul	5181-3354
CSG003668	25F-AG-GT-0.63/0.47 25UL SYRINGE	25ul	G4513-80241
CSG004668	50F-AG-GT-0.63/0.47 50UL SYRINGE	50ul	G4513-80244
CSG005668	100F-AG-GT-0.63/0.47 100UL SYRINGE	100ul	G4513-80243

Syringes for CTC Auto sampler

Cat. No.	Description	Volume
CSG000490	0.5BNR-C/T-5/0.47C 0.5UL SYRINGE	0.5ul
CSG000492	0.5BNR-C/T-5/0.63C 0.5UL SYRINGE	0.5ul
CSG002986	SK-10F-C/T-5/0.47C 6PK SYRINGE	10ul
CSG003770	25R-CTC-GT-MS1 25UL DIAMOND MS SYRINGE	25ul
CSG003987	25F-C/T-GT-0.63C 25UL SYRINGE	25ul
CSG003988	25R-C/T-GT-0.47H 25UL SYRINGE	25ul
CSG004770	50R-CTC-GT-MS1 50UL DIAMOND MS SYRINGE	50ul
CSG005770	100R-CTC-GT-MS1 100UL DIAMOND MS SYRINGE	100ul
CSG005335	100F-C/T-GT-0.63C 100UL SYRINGE	100ul

Manual syringes

Cat. No.	Description	Volume
CSG000300	0.5BNR-5 0.5UL SYRINGE	0.5ul

CSG000310	0.5BR-7 0.5UL SYRINGE	0.5ul
CSG000500	1BR-5 1UL SYRINGE	1ul
CSG000501	1BR-5BV 1UL SYRINGE	1ul
CSG000505	1BR-7 1UL SYRINGE	1ul
CSG000506	1BR-7BV 1UL SYRINGE	1ul
CSG000800	5BR-5 5UL SYRINGE	5ul
CSG000801	5BR-5BV 5UL SYRINGE	5ul
CSG000802	5BR-7 5UL SYRINGE	5ul
CSG000803	5BR-7BV 5UL SYRINGE	5ul
CSG002030	SK-10F 10UL 6PK SYRINGE	10ul
CSG002202	SK-10F-GT 10UL 6PK SYRINGE	10ul
CSG003000	25F 25UL SYRINGE	25ul
CSG003050	25R 25UL SYRINGE	25ul
CSG003200	25F-GT 25UL SYRINGE	25ul
CSG003250	25R-GT 25UL SYRINGE	25ul
CSG004000	50F 50UL SYRINGE	50ul
CSG004050	50R 50UL SYRINGE	50ul
CSG004200	50F-GT 50UL SYRINGE	50ul
CSG004250	50R-GT 50UL SYRINGE	50ul
CSG005000	100F 100UL SYRINGE	100ul
CSG005050	100R 100UL SYRINGE	100ul
CSG005055	100R-7 100UL SYRINGE	100ul
CSG005200	100F-GT 100UL SYRINGE	100ul
CSG005250	100R-GT 100UL SYRINGE	100ul
CSG006000	250F 250UL SYRINGE	250ul
CSG006050	250R 250UL SYRINGE	250ul
CSG006200	250F-GT 250UL SYRINGE	250ul
CSG006250	250R-GT 250UL SYRINGE	250ul
CSG007000	500F 500UL SYRINGE	500ul
CSG007050	500R 500UL SYRINGE	500ul
CSG007200	500F-GT 500UL SYRINGE	500ul
CSG007250	500R-GT 500UL SYRINGE	500ul
CSG008020	1MF-LT-GT 1ML SYRINGE	1ml
CSG008100	1MR-GT 1ML SYRINGE	1ml
CSG008420	2.5MDF-LT-GT 2.5ML SYRINGE	2.5ml
CSG008425	2.5MDF-LL-GT 2.5ML SYRINGE	2.5ml
CSG008500	2.5MDR-GT 2.5ML SYRINGE	2.5ml
CSG008502	2.5MDF-GT 2.5ML SYRINGE	2.5ml
CSG008700	5MDR-GT 5ML SYRINGE	5ml
CSG008760	5MDR-LL-GT 5ML SYRINGE	5ml
CSG008762	5MDF-LL-GT 5ML SYRINGE	5ml
CSG008900	10MDR-GT 10ML SYRINGE	10ml
CSG008960	10MDR-LL-GT 10ML SYRINGE	10ml
CSG008962	10MDF-LL-GT 10ML SYRINGE	10ml
CSG009462	25MDR-LL-GT 25ML SYRINGE	25ml
CSG009463	25MDF-LL-GT 25ML SYRINGE	25ml

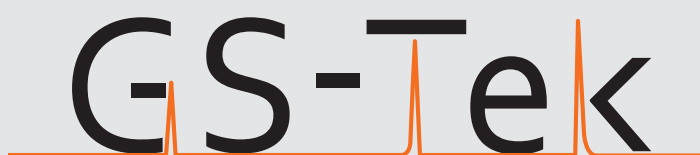
Swagelok Fitting

Cat. No.	Description
SS-100-6	1/16" Stainless Steel Union 2/pk
SS-100-3	1/16" Stainless Steel Tee, 2/pk
SS-100-4	SS Swagelok Tube Fitting, Union Cross, 1/16 in. Tube OD 2/pk
SS-100-set-10	SS Ferrule Set (1 Front Ferrule/1 Back Ferrule) for 1/16 in. Swagelok Tube Fitting, 10/set
SS-200-6	1/8" Stainless Steel Union, 10/pk
SS-200-6-1	1/8" X 1/16" Stainless Steel Reducing Union, 5/pk
SS-200-R-4	1/8" X 1/4" Stainless Steel Tube Reducer, 5/pk
SS-200-P	1/8" Stainless Steel Plug, 10/pk
SS-200-3	1/8" Stainless Steel Tee, 2/pk
SS-200-4	SS Swagelok Tube Fitting, Union Cross, 1/8 in. Tube OD, 2/pk
SS-400-6	1/4" Stainless Steel Union, 10/pk
SS-400-6-1	1/4" X 1/16" Stainless Steel Reducing Union, 5/pk
SS-400-6-2	1/4" X 1/8" Stainless Steel Reducing Union, 5/pk
SS-400-P	1/4" Stainless Steel Plug, 10/pk
SS-400-3	1/4" Stainless Steel Tee, 2/pk
SS-400-4	SS Swagelok Tube Fitting, Union Cross, 1/4 in. Tube OD 2/pk

Valco Sampling Valves

Cat. No.	Description
4C4UWE	Valco Gas Sampling Valve, 4 port 2-pos valve, manual/4"so 1/16".75mm, 225C/400psi gas, N60/E
4C6UWE	Valco Gas Sampling Valve, 6 port 2-pos valve, manual/4"so 1/16".75mm, 225C/400psi gas, N60/E
4C8UWE	Valco Gas Sampling Valve, 8 port 2-pos valve, manual/4"so 1/16".75mm, 225C/400psi gas, N60/E
4C10UWE	Valco Gas Sampling Valve, 10 port 2-pos valve, manual/4"so 1/16".75mm, 225C/400psi gas, N60/E
A44UWE	Valco Gas Sampling Valve 4 port 2-pos valve, air actuated/4"so, 1/8".75mm, 225C/400psi gas, N60/E
A46UWE	Valco Gas Sampling Valve 6 port 2-pos valve, air actuated/4"so, 1/8".75mm, 225C/400psi gas, N60/E
A48UWE	Valco Gas Sampling Valve 8 port 2-pos valve, air actuated/4"so, 1/8".75mm, 225C/400psi gas, N60/E
A4C10UWE	Valco Gas Sampling Valve 10 port 2-pos valve, air actuated/4"so, 1/16".75mm, 225C/400psi gas, N60/E
2I4UWE.2	Liquid Sampling Valve, 4 port 2-pos int vol valve, manual/2"so 1/8".75mm, 175C/1000psi liq, .2ul, N60/E
2I4UWE.5	Liquid Sampling Valve, 4 port 2-pos int vol valve, manual/2"so 1/8".75mm, 175C/1000psi liq, .5ul, N60/E
2I4UWE1	Liquid Sampling Valve, 4 port 2-pos int vol valve, manual/2"so 1/8".75mm, 175C/1000psi liq, 1ul, N60/E
2I4UWE2	Liquid Sampling Valve, 4 port 2-pos int vol valve, manual/2"so 1/8".75mm, 175C/1000psi liq, 2ul, N60/E

**GsBP™ is not just another
quality column brand**

The logo for GS-Tek features the text "GS-Tek" in a bold, black, sans-serif font. The text is positioned above a horizontal orange line. Three sharp, narrow peaks, characteristic of a chromatogram, are superimposed on the orange line. The first peak is located under the letter 'G', the second under the hyphen, and the third under the letter 'k'.

GS-Tek

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