

Cut through the noise.



Agilent J&W Scientific
GC/MS columns

Agilent J&W Scientific GC/MS columns. Minimized baseline elevation, increased sensitivity, and a better bottom line.

In today's demanding lab environment, you're under more pressure than ever to deliver fast, accurate results. Interferences due to column bleed and activity can be detrimental. Diverting resources to repeat or verify suspect analyses has a definite negative impact on overall lab productivity — and a real bottom-line impact on your business.

Agilent's J&W Scientific GC/MS columns are "MS-grade" columns that can help you achieve improved analytical sensitivity by lowering bleed, increasing inertness and improving spectral clarity for faster and more accurate peak identification.

Agilent J&W GC/MS columns are low bleed columns.

One of the defining features of an Agilent J&W "MS grade" column is a lower bleed level than its standard counterpart. This feature improves sensitivity and more:

- Improves mass spectral clarity — A lower abundance of column bleed ions results in easier and more accurate peak identification.
- Higher upper temperature limits — Increased polymer stability allows users to increase column operating temperature, particularly for more polar phases, potentially providing shorter run times and longer lifetimes.
- Less detector maintenance — Many GC detectors (MS, FID, PID, ECD, NPD, SCD) are sensitive to contamination from bleed and will require less maintenance due to a decrease in the amount of bleed from the column.

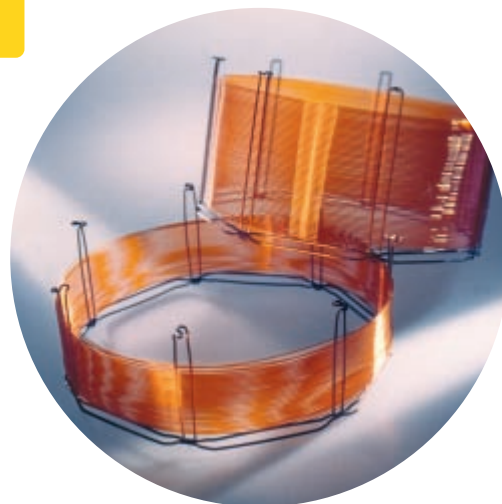
Improve productivity with increased sensitivity.

Agilent J&W GC/MS columns are highly efficient, inert and bleed less than the competition, offering you uncompromised sensitivity. When used in conjunction with an optimized GC/MS system, these columns achieve the lowest possible detection limits for your most difficult analytes with excellent mass spectral clarity.

Increased analytical sensitivity with resulting lower detection limits is a function of the ratio of signal-to-noise. Improvements to signal-to-noise are achieved by:

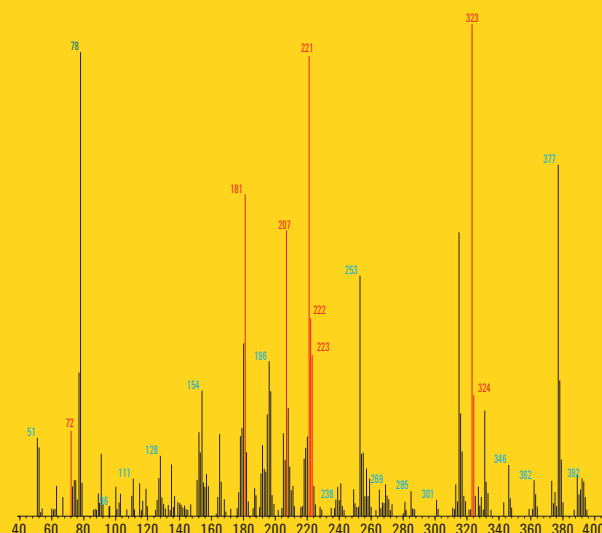
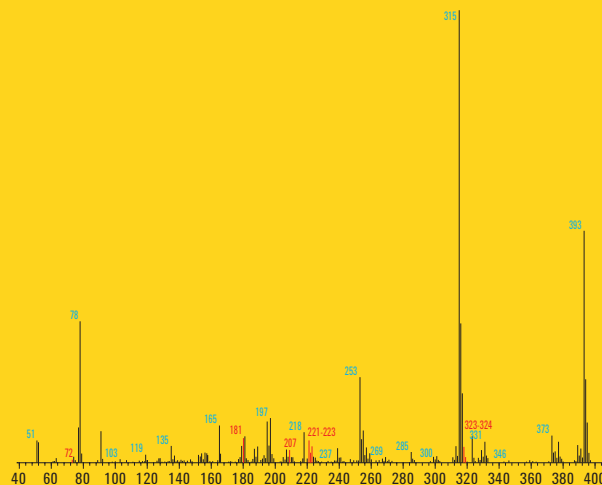
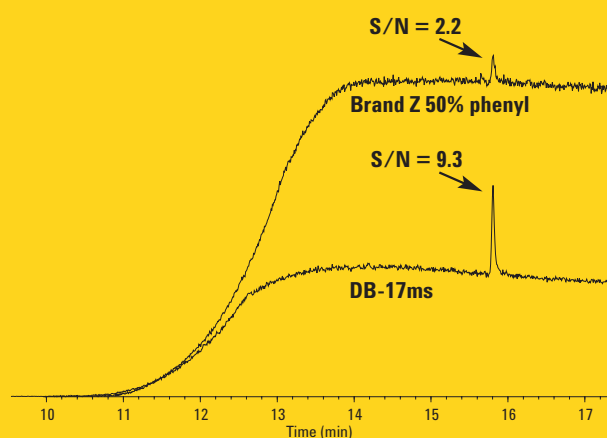
- Increasing signal — Highly efficient, inert GC/MS columns produce narrow and tall peaks for the most active analytes.
- Decreasing noise — Low column bleed reduces baseline rise and the amount of noise contributed by the column, thereby reducing baseline interference.

The GC/MS user performing trace level analysis will especially benefit from using Agilent J&W GC/MS columns. Anyone doing trace level analysis, regardless of detector type, will gain from the excellent inertness, decreased noise, and other benefits that only Agilent J&W Scientific GC/MS columns provide.



Competitors just can't make the grade. See for yourself.

Comparison of 20ng LSD separated on an Agilent J&W Scientific DB-17ms column and a competitor's 50% phenyl dimethylpolysiloxane column at 340°C.



Agilent J&W Scientific GC/MS columns solve the most difficult problems.

Best Inertness: LSD is an unstable, amine-based compound, which is notoriously difficult to analyze. Column activity must be minimal in order to achieve adequate detection. In this comparison, since the inlet, detector and other system components are exactly the same, the highly inert Agilent J&W DB-17ms has a higher analyte response due to low column activity.

Lowest Bleed: The Agilent J&W DB-17ms column has significantly lower bleed — 3.5 times lower than the competitor's "ms-certified" column — as demonstrated by a separate FID bleed comparison.

High Sensitivity: The low column bleed and increased inertness of the Agilent J&W DB-17ms results in a signal-to-noise ratio over **four times greater than the competitor's product**. This will allow for lower detection limits for trace analyses and an increased usable column lifetime.

Unquestionable Spectral Integrity: LSD qualitative ions are shown in red. Due to the lower bleed of the Agilent J&W DB-17ms, the relative abundance of the qualitative ions make peak identification certain compared to the competitor's column where the majority of the qualitative ions are lost in the bleed.

Agilent provides the widest MS-grade column portfolio you can find.

With so many GC applications, it's critical that you have a complete range of selectivity to choose from. Agilent offers the widest portfolio of MS-grade columns in the industry specifically engineered to yield columns with low bleed, high thermal stability and excellent inertness. This is achieved through arylene phase technology and optimized siloxane manufacturing processes. Each approach ensures excellent column performance for the broadest range of compounds, including chemically active analytes — acids, bases and highly substituted compounds.

Agilent optimized bonded phases maximize sensitivity and thermal stability.

Arylene phases

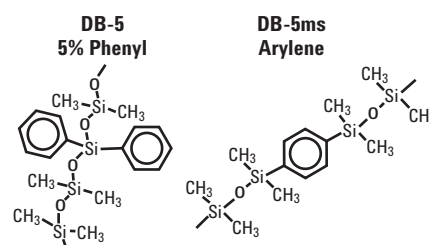
Arylene MS-grade columns utilize special surface deactivations and siloxane chemistries, which enhance the chromatographic performance of siloxane polymers. The arylene inclusion in the siloxane polymer strengthens the polymer backbone, reducing the amount of stationary phase degradation, thus reducing column bleed.

Arylene phase columns

	DB-5ms	DB-XLB	DB-35ms	DB-17ms	DB-225ms
Phase	Arylene	Second generation arylene	Second generation arylene	Second generation arylene	Second generation arylene
Selectivity	Virtually identical to 5% phenyl siloxane	Unique selectivity. Slightly more polar than a 5% phenyl siloxane.	Virtually identical to 35% phenyl siloxane	Virtually identical to 50% phenyl siloxane	Virtually identical to 50% cyano-propylphenyl-methylpolysiloxane
Polarity	Low	Low	Mid	Mid	Mid/High
Upper Temperature Limit	325/350°C same as DB-5	340/360°C	340/360°C compared to 280/300°C	320/340°C compared to 280/300°C	240°C compared to 220/240°C

Note: Good for all general applications, the DB-XLB's unique selectivity makes it the first choice for the GC/MS analysis of specific PCB congeners.

Note: DB-35ms and DB-XLB are also ideal for dual column ECD methods such as CLP pesticides, chlorinated herbicides, Aroclors, and haloacetic acids.



Each arylene "ms" phase was designed to be virtually identical to their "parent" polymer, so selectivity differences are very subtle.

Optimized siloxanes

Agilent Technologies has utilized its years of experience as the world's largest manufacturer of capillary GC columns to design MS phases that meet the requirements of trace analysis and retain the selectivity of the corresponding non-MS columns. This translates into improved deactivation, new polymer synthesis and processing techniques and stringent quality control.

Optimized siloxane columns

	DB-1ms	HP-1ms	HP-5ms
Phase	100% Dimethylpolysiloxane	100% Dimethylpolysiloxane	5% phenyl Dimethylpolysiloxane
Selectivity	Exactly the same as DB-1	Exactly the same as HP-1	Exactly the same as HP-5
Upper Temperature Limit	340/360°C compared to 325/350°C	325/350°C same as HP-1	325/350°C same as HP-5

GC column quality control — Agilent sets the standard.

At Agilent Technologies, we take column quality control seriously. We've developed rigorous QC testing protocols to ensure optimum column performance, and unsurpassed column-to-column reproducibility, for a broad range of analytes and conditions.

GS-GasPro — an MS-grade PLOT column

SF₆ electrical discharge by-products

Column: GS-GasPro
60 m x 0.32 mm I.D.

Carrier: Helium at 37 cm/sec (2.0 mL/min),
measured at 80 °C

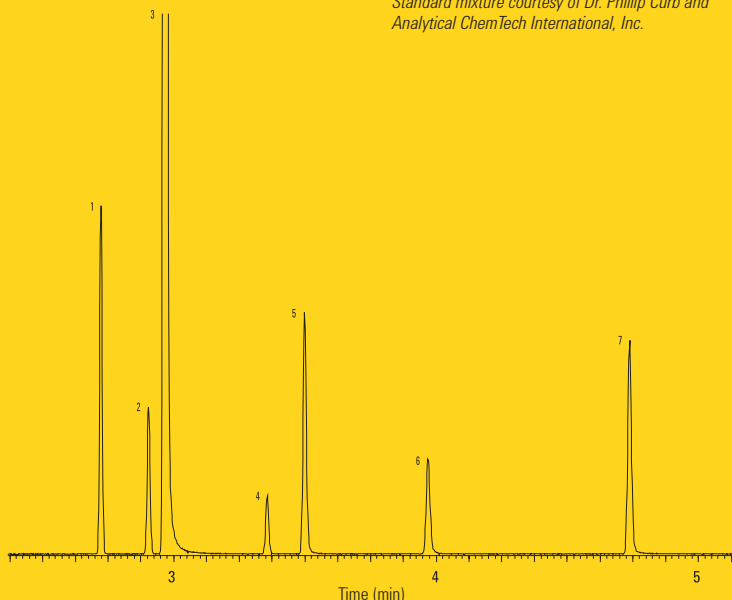
Oven: 80 °C for 2 min
80-200 °C at 20 °/min

Injector: Split 1:50, 225 °C
10 mL injection of SF₆ standard

Detector: MSD, 280 °C transfer line
full scan of m/z 44-150

1. Carbon tetrafluoride (CF ₄)	7% wt.
2. Carbon dioxide (CO ₂)	4% wt.
3. Sulfur hexafluoride (SF ₆)	62% wt.
4. Carbonyl sulfide (COS)	5% wt.
5. Sulfuryl fluoride (SO ₂ F ₂)	4% wt.
6. Dichlorodifluoromethane (CCl ₂ F ₂)	4% wt.
7. Sulfur dioxide (SO ₂)	14% wt.

Standard mixture courtesy of Dr. Phillip Curb and Analytical ChemTech International, Inc.



Historically, PLOT columns have not been used with mass spec detectors because of the possibility that dislodged particles could contaminate the detector. The unique bonded PLOT column technology makes it virtually impossible for the GS-GasPro to generate particles.

The GS-GasPro, with its unrivaled performance for sulfur compounds and light hydrocarbons, is a versatile PLOT column ideal for GC/MS. With an upper temperature limit of 300 °C, the GS-GasPro is able to separate permanent gases up to hydrocarbons in the range of C11.

Every column is rigorously tested.

We test every Agilent J&W Scientific GC column we manufacture — we don't batch test.

Each column is tested for a variety of parameters to ensure lowest column bleed, consistent selectivity, accurate film thickness, the best inertness, and the highest efficiency.

Every GC column configuration (part number) has a narrow allowable pass range to ensure column-to-column reproducibility.

For over eight years we have published our quality control specifications for our columns, raising the bar for quality GC columns.



Agilent Technologies has utilized its years of experience as the world's largest manufacturer of capillary GC/MS columns to design phases that meet the requirements of trace analysis.

A true high-performing GC/MS system begins with the selection of the right GC/MS column...

Every Agilent J&W Scientific GC/MS column is tested with several probes with different chemical characteristics so that any subtle polymer selectivity variations will be avoided. This ensures that every column you order will have the same selectivity characteristics as the one before — negating the need for method modification when columns are changed.

This listing represents a small sampling of the many Agilent J&W Scientific GC/MS column configurations that Agilent offers.

To order, call us at 800-227-9770 or go to www.agilent.com/chem to order online. Or contact your authorized Agilent distributor.



Phase	I.D. (mm)	Length (m)	Film (µm)	Temp Limits (°C)	Part No.	Price
DB-1ms	0.25	30	0.10	-60 to 340/360	122-0131	\$482
DB-1ms	0.25	30	0.25	-60 to 340/360	122-0132	\$482
DB-1ms	0.25	60	0.25	-60 to 340/360	122-0162	\$821
HP-1ms	0.25	30	0.25	-60 to 325/350	19091S-933	\$482
HP-1ms	0.25	30	0.50	-60 to 325/350	19091S-633	\$485
DB-5ms	0.25	30	0.25	-60 to 325/350	122-5532	\$482
DB-5ms	0.25	30	0.50	-60 to 325/350	122-5536	\$482
DB-5ms	0.25	60	0.25	-60 to 325/350	122-5562	\$821
HP-5ms	0.25	30	0.25	-60 to 325/350	19091S-433	\$482
HP-5ms	0.25	30	0.50	-60 to 325/350	19091S-133	\$482
HP-5ms	0.25	60	0.25	-60 to 325/350	19091S-436	\$821
DB-XLB	0.25	30	0.25	30 to 340/360	122-1232	\$482
DB-XLB	0.25	30	0.50	30 to 340/360	122-1236	\$482
DB-XLB	0.25	60	0.25	30 to 340/360	122-1262	\$821
DB-35ms	0.25	30	0.15	50 to 340/360	122-3831	\$482
DB-35ms	0.25	30	0.25	50 to 340/360	122-3832	\$482
DB-35ms	0.25	60	0.25	50 to 340/360	122-3862	\$821
DB-17ms	0.25	30	0.15	40 to 320/340	122-4731	\$482
DB-17ms	0.25	30	0.25	40 to 320/340	122-4732	\$482
DB-17ms	0.25	60	0.25	40 to 320/340	122-4762	\$821
DB-225ms	0.25	30	0.25	40 to 240	122-2932	\$482
GS-GasPro	0.32	60	NA	-80 to 260/300	113-4362	\$940

...coupled with "PerfectFit," high-quality components and expert support.

As bleed from the column is reduced, contribution from secondary components becomes increasingly significant and troublesome. To ensure best quality results, make sure to upgrade to Agilent PerfectFit consumables and supplies, including high-quality septa, appropriate ferrules, and clean, deactivated liners. Also use gas purifiers to minimize background interferences from contaminants and oxygen.

Agilent septa. Because bleed from septa can be a major contributor to the overall signal, a high-quality septum is an absolute necessity for GC/MS and all other analysis demanding increased sensitivity.

Remember, too, that after repeated injections, the septum can become prone to leakage. To maintain system integrity, septa must be changed regularly and repeatedly.

Agilent Vespel/graphite ferrules. Regular graphite ferrules can shear off graphite flakes, which can be pulled into the MSD by the vacuum and contaminate the detector. Our Vespel/graphite ferrules are the perfect hardness, making them the preferred ferrule for GC/MS applications.

Use new ferrules when installing a new column.

Agilent liners. Liners can become a major obstacle to achieving the full benefits of a true low-bleed system. Contaminated liners affect peak symmetry and can increase detector background noise.

Always start with a clean, deactivated liner. Inspect it and replace regularly.

Let Agilent expertise help you meet the challenge.

Let us help you get the most out of your GC/MS analyses. Our 35 years of lab-tested expertise and engineering know-how can help you maximize speed and efficiency — and minimize downtime — in your lab.

We can help you meet any business challenge. For instrument support, technical support and education, our services are unmatched. Look to Agilent to be your single source partner for all your lab needs.



"Optimum success in GC/MS analyses is a matter of the right column and high-quality secondary components — as well as access to the best experience and expertise."

Phil Stremple, Ph.D., Chemistry
GC Columns Program Manager



www.agilent.com/chem
800-227-9770



Get better results with Agilent J&W Scientific GC/MS columns.

Anyone doing trace level analyses will gain from the excellent benefits that only Agilent J&W Scientific GC/MS columns provide.

Choose from the widest MS-grade column portfolio in the industry.

Our extensive portfolio of MS-grade columns is specifically engineered to yield low bleed, high thermal stability and excellent inertness.

We guarantee that each and every column is QC-tested to tight specifications.

With our unequalled quality control standards and testing protocols, optimum performance is ensured for the broadest range of analytes and conditions.

Call us at 800-227-9770 or visit us at www.agilent.com/chem and order your Agilent J&W Scientific GC/MS column today.

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Printed in USA May 30, 2002
5988-6678ENUS



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