

Analyze more samples
faster
while maintaining resolution.



NEW Agilent J&W High Efficiency Capillary GC Columns

Our measure is your success.



"We need to run twice as many samples in the same amount of time with the same resources."

"I want to speed up my sample run time without sacrificing performance."

"We have to find a way to reduce our cost per analysis without expensive system modifications and time-consuming method development."

Now it is possible to achieve high efficiency, high throughput, and high resolution... without the high costs.

Whether you are determining the purity of aromatic hydrocarbons... analyzing residual solvents in drug substances... or screening for organic contaminants, chances are good that you're under pressure to increase productivity while your resources remain constant.

That is why we're so enthusiastic about our newest GC columns – one that sets a new standard for speed and accuracy.

Introducing Agilent J&W High Efficiency Capillary GC Columns: a faster, more reliable way to run high-throughput analysis.

Agilent J&W High Efficiency Capillary GC Columns are ideal for applications that require faster run times, such as high-throughput screening, fast process monitoring, and fast method development. They are also flexible enough to be used in a wide variety of environmental, petrochemical, flavor/fragrance, clinical toxicology, and pharmaceutical sample matrices.

Decrease your run time by 50% or more, compared to conventional GC.

Agilent J&W High Efficiency Capillary GC Columns can **reduce your sample run time by 50% or more** without compromising your resolution. So you can improve your productivity and meet the tightest time constraints.

Get the reliable results you need using the resources you have.

Unlike competitive 0.1 mm ID columns, Agilent J&W High Efficiency Capillary GC Columns are compatible with all standard-pressure capillary GC and GC/MS instruments without expensive high-pressure modifications. They also give you:

- **The flexibility to choose between helium and hydrogen carrier gases.** You can stay with a helium carrier if you wish to simplify method development, or switch to a hydrogen carrier if faster analysis is desired.
- **The ability to separate samples using less carrier gas,** which can lead to longer intervals between cylinder changes, increased uptime, and a lower cost per sample.

Proven reliability and robustness in real-life sample matrices.

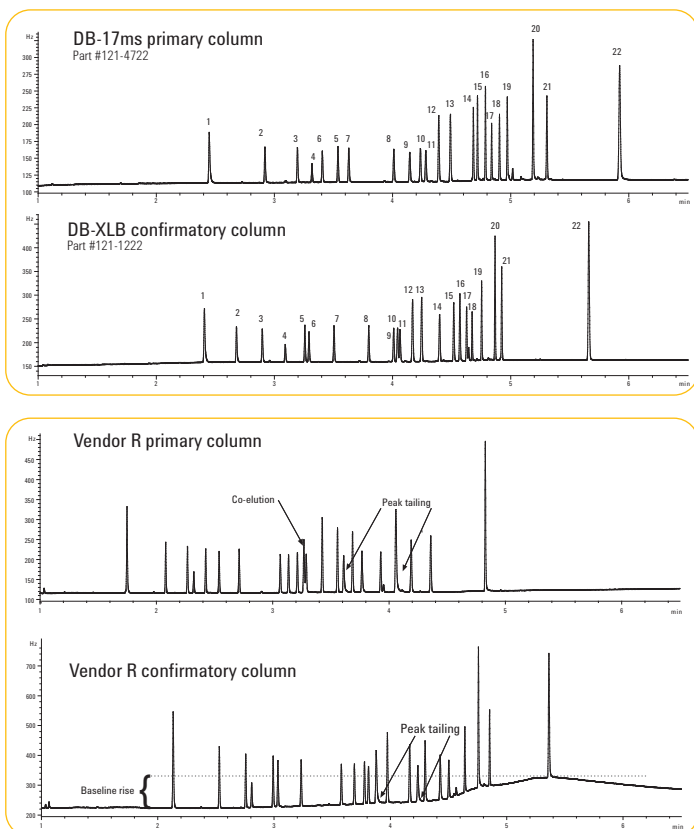
A study conducted by the United States Environmental Protection Agency confirmed that, under actual laboratory conditions:

Twice as many samples were analyzed over a 9-month period using Agilent 0.18 mm High Efficiency Capillary Columns, compared with 0.32 mm I.D. columns.

Agilent 0.18 mm High Efficiency Capillary Columns showed remarkable durability, and lasted approximately as long as 0.32 mm I.D. columns.

Source: The Journal of Chromatographic Science: September 2002.

When it comes to speed and resolution, Agilent High Efficiency GC Columns outperform a leading competitor. And this side-by-side comparison *proves* it!



1. Tetrachloro-m-xylene
2. Alpha BHC
3. Gamma BHC
4. Beta BHC
5. Delta BHC
6. Heptachlor
7. Aldrin
8. Heptachlor Epoxide
9. Gamma Chlordane
10. Alpha Chlordane
11. Endosulfan I
12. 4,4' DDE
13. Dieldrin
14. Endrin
15. 4,4' DDD
16. Endosulfan II
17. 4,4' DDT
18. Endrin Aldehyde
19. Endosulfan Sulfate
20. Methoxychlor
21. Endrin Ketone
22. Decachlorobiphenyl

A Direct Column-Performance Comparison for Rapid CLP (Contract Laboratory Program) Pesticide Analysis

As you can see, **Agilent's DB-17ms primary analysis column** resolved all 22 peaks of interest in less than 6 minutes with sharp symmetry and minimal baseline drift.

Conversely, vendor R's primary analysis column resolved only 20 of 22 peaks – and displayed evidence of peak tailing.

Agilent's DB-XLB confirmatory analysis column resolved 20 peaks of interest in less than 6 minutes (the remaining peaks were close to being baseline resolved and sufficient for peak confirmation.).

Vendor R's confirmatory column resolved all 22 peaks of interest; however there is evidence of peak tailing, as well as an unacceptable level of temperature-dependent baseline drift. Compare that to Agilent's results, which show sharp, symmetrical peaks and minimal temperature-dependent baseline drift.

Columns: DB-17 ms (20 m x 0.18 mm x 0.18 μm)
DB-XLB (20 m x 0.18 mm x 0.18 μm)

Carrier: Hydrogen (69 cm/sec at 120% C, ramped at 99 ml/min to 106 cm/sec at 4.4 minutes)

Inlet: Split/splitless; 220% C, pulsed splitless (35 psi for 0.5 min, purge flow of 40 ml/min on at 1 minute, gas saver flow 20 ml/min on 3 minutes)

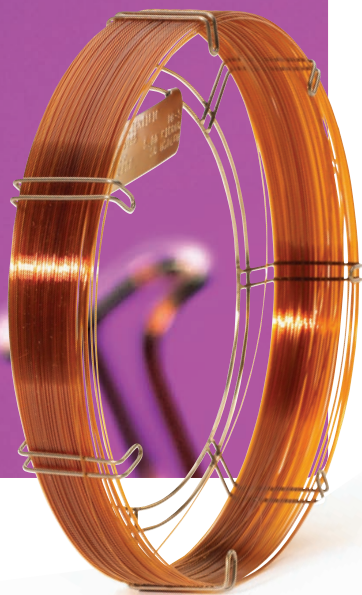
Oven: 120% C (0.32 min); 120 % C/min to 160% C; 30 % C/min to 258% C (0.18 min); 38.81% C/min to 300% C (1.5 min)

Detector: μECD 320% C; nitrogen makeup; constant column + makeup flow 60 ml/min

To learn more, reference publication number 5989-8031EN at www.agilent.com/chem

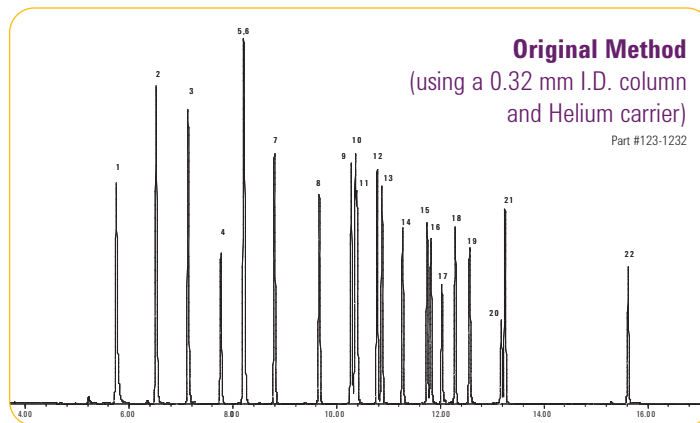
To start achieving faster separations – and results you can trust – go to www.agilent.com/chem/HEcolumns2

Here are some industry-specific examples of how **Agilent J&W High Efficiency Capillary GC Columns** can open the door to fast GC applications.



Environmental and Food Safety

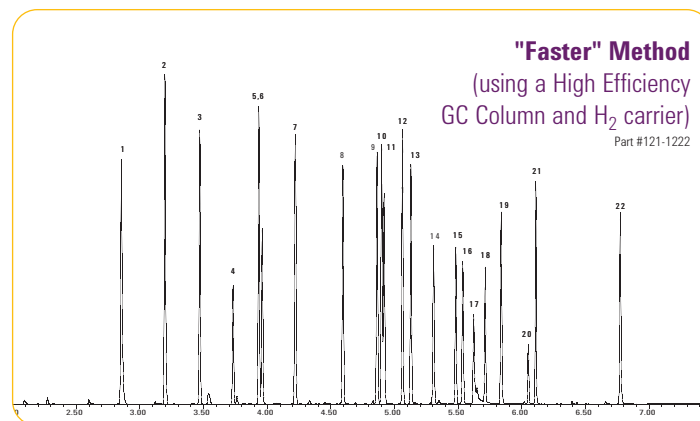
Contract Laboratory Program (CLP) pesticide analysis on High Efficiency (0.18 mm I.D.) GC columns. In this example, the analysis of 22 CLP pesticides were achieved in 16 minutes using the original method, whereas the improved method was completed in just under 7 minutes. *That's a 56% faster sample run time.*



Column: DB-XLB
30 m x 0.32 mm i.d., 0.25 μ m
Carrier: He, constant flow, 38 cm/s at 120 °C
Injector: Pulsed Splitless, 220 °C
Pulse pressure & time: 35 psi for 1.15 min
2 μ l, 50 ppb

Oven: 120 °C for 1.17 min
120 °C to 160 °C at 25 °/min
160 °C to 260 °C at 10 °/min
260 °C to 300 °C (4 min) at 15 °/min
Detector: μ -ECD, 320 °C
Ar/CH4 (P5) makeup gas at 60 mL/min

1. TCMX
2. Alpha BHC
3. Gamma BHC
4. Beta BHC
5. Delta BHC
6. Heptachlor
7. Aldrin
8. Heptachlor Epoxide
9. Gamma Chlordane
10. Alpha Chlordane
11. Endosulfan I
12. 4,4' DDE
13. Dieldrin
14. Endrin
15. 4,4' DDD
16. Endosulfan II
17. 4,4' DDT
18. Endrin Aldehyde
19. Endosulfan Sulfate
20. Methoxychlor
21. Endrin Ketone
22. DCE



Column: DB-XLB
20 m x 0.18 mm i.d., 0.18 μ m
Carrier: H₂, constant flow, 77.3 cm/s at 120 °C
Injector: Pulsed Splitless, 220 °C
Pulse pressure & time: 35psi for 0.5 min Flow ramp at 6.25 min of 99 mL/min 2 to 3 mL/min
2 mm i.d. liner
0.5 μ l, 50 ppb

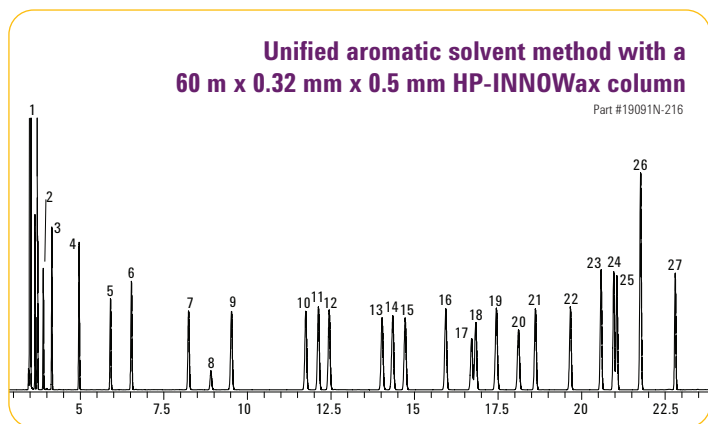
Oven: 120 °C for 0.49 min
120 °C to 160 °C at 59.4 °/min
160 °C to 260 °C at 23.7 °/min
260 °C to 300 °C (1.69min) at 35.6 °/min
Detector: μ -ECD, 320 °C
Ar/CH4 (P5) makeup gas at 60mL/min

To learn more, reference publication number 5989-7616EN at www.agilent.com/chem

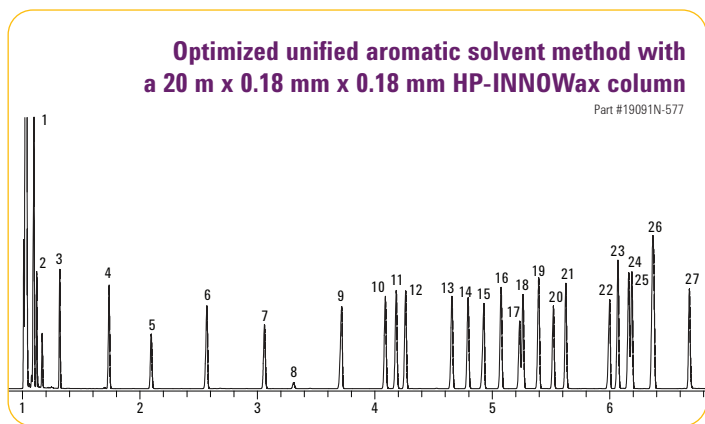
Chemical and Petrochemical Industry

This application showcases the practicality using high efficiency GC columns in daily aromatic solvent analysis.

The result: a three-fold reduction in run time (compared to a 0.32 mm I.D. column) with no change in resolution.



- | | | | |
|---------------|--------------|-----------------|------------------|
| 1 Heptane | 5 Benzene | 9 Undecane | 13 Cumene |
| 2 Cyclohexane | 6 Decane | 10 Ethylbenzene | 14 Dodecane |
| 3 Octane | 7 Toluene | 11 p-Xylene | 15 o-Xylene |
| 4 Nonane | 8 1,4-Dioxan | 12 m-Xylene | 16 Propylbenzene |



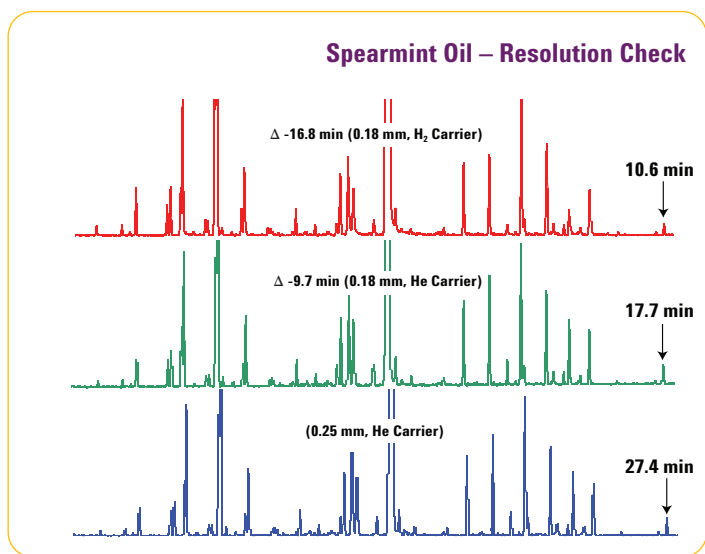
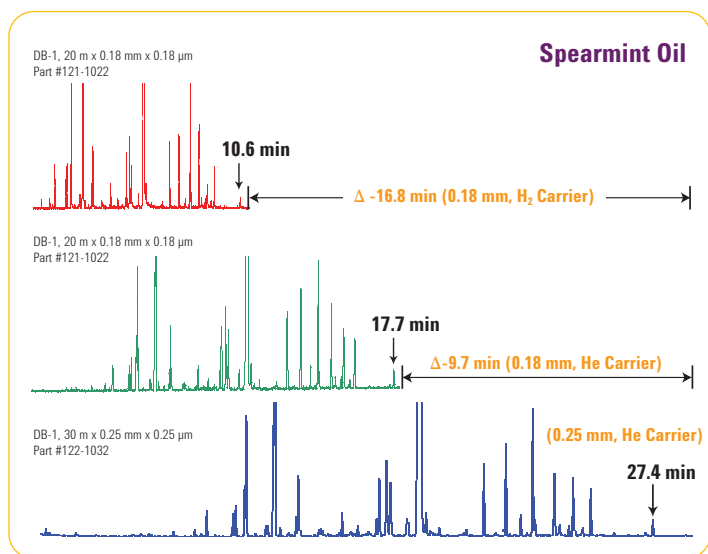
- | | | |
|-------------------|-----------------------|--------------------|
| 17 p-Ethyltoluene | 21 Styrene | 25 n-Butylbenzene |
| 18 m-Ethyltoluene | 22 Tridecane | 26 a-Methylstyrene |
| 19 t-Butylbenzene | 23 1,3-Diethylbenzene | 27 Phenylacetylene |
| 20 s-Butylbenzene | 24 1,2-Diethylbenzene | |

To learn more, reference publication number 5989-2623EN at www.agilent.com/chem

Foods, Flavors, and Fragrances

These applications demonstrate how changes to column dimension (both alone and in combination with carrier gas modifications) affect sample run time.

Agilent's Method Translation Software was used to scale existing 0.25 mm I.D. column methods to 0.18 mm I.D. columns. Note that, in addition to the significant gains in speed, resolution was well maintained throughout the method translation process.



To learn more, reference publication number 5989-7509EN at www.agilent.com/chem

To order, go to www.agilent.com/chem/HEcolumns2

With 65 part numbers and 23 stationary phases, Agilent has the largest selection of High Efficiency GC Columns for the widest range of applications.

Stationary Phase	Part Number (7" cage)	I.D. (mm)	Length (m)	Film Thickness (µm)	Part Number (5" cage)
DB-1	121-1012	0.18	10	0.18	121-1012E
	121-1013	0.18	10	0.40	121-1013E
	121-101A	0.18	10	0.20	
	121-1022	0.18	20	0.18	121-1022E
	121-1023	0.18	20	0.40	
	121-1043	0.18	40	0.40	121-1043E
HP-1	19091Z-577	0.18	20	0.18	19091Z-577E
DB-1ms	121-0122	0.18	20	0.18	121-0122E
HP-1ms	19091S-677	0.18	20	0.18	19091S-677E
DB-5	121-5012	0.18	10	0.18	121-5012E
	121-5013	0.18	10	0.40	
	121-5022	0.18	20	0.18	121-5022E
	121-5023	0.18	20	0.40	121-5023E
	121-5042	0.18	40	0.18	
HP-5	19091J-577	0.18	20	0.18	19091J-577E
DB-5ms	121-5522	0.18	20	0.18	121-5522E
	121-5542	0.18	40	0.18	
	121-5523	0.18	20	0.36	
HP-5ms	19091S-577	0.18	20	0.18	19091S-577E
DB-XLB	121-1222	0.18	20	0.18	121-1222E
	121-1232	0.18	30	0.18	

Stationary Phase	Part Number (7" cage)	I.D. (mm)	Length (m)	Film Thickness (µm)	Part Number (5" cage)
DB-35ms	121-3822	0.18	20	0.18	121-3822E
DB-17	121-1722	0.18	20	0.18	
	121-1723	0.18	20	0.30	
DB-17ms	121-4722	0.18	20	0.18	121-4722E
HP-50+	19091L-577	0.18	20	0.18	
DB-23	121-2323	0.18	20	0.20	
DB-225	121-2223	0.18	20	0.20	
DB-624	121-1324	0.18	20	1.00	121-1224E
DB-1301	121-1313	0.18	10	0.40	
DB-1701	121-0713	0.18	10	0.40	
	121-0722	0.18	20	0.18	
DB-WAX	121-7012	0.18	10	0.18	
	121-7022	0.18	20	0.18	121-7022E
	121-7023	0.18	20	0.30	121-7023E
	121-7042	0.18	40	0.18	121-7042E
	121-7043	0.18	40	0.30	
HP-INNOWax	19091N-577	0.18	20	0.18	19091N-577E
DB-5.625	121-5621	0.18	20	0.18	
	121-5622	0.18	20	0.36	
DB-VRX	121-1524	0.18	20	1.00	
	121-1544	0.18	40	1.00	121-1544E
DB-608	121-6822	0.18	20	0.18	



Eliminate time-consuming method re-development with Agilent's FREE Method Translation Software.

Method Translation Software is a fast, reliable tool for translating methods to Agilent's 0.18 mm column dimension. This software creates a perfectly scaled version of your original method, while allowing you to rapidly predict required gas velocity, oven temperature program rates, and relative run times.

You should use Method Translation Software whenever you change carrier gas type, column dimensions, phase ratio, column head pressure, carrier gas flow rate, or holdup time; however, the one assumption is that you do *not* change your stationary phase.

To download Agilent's Method Translation Software, go to www.agilent.com/chem/myGCcolumns

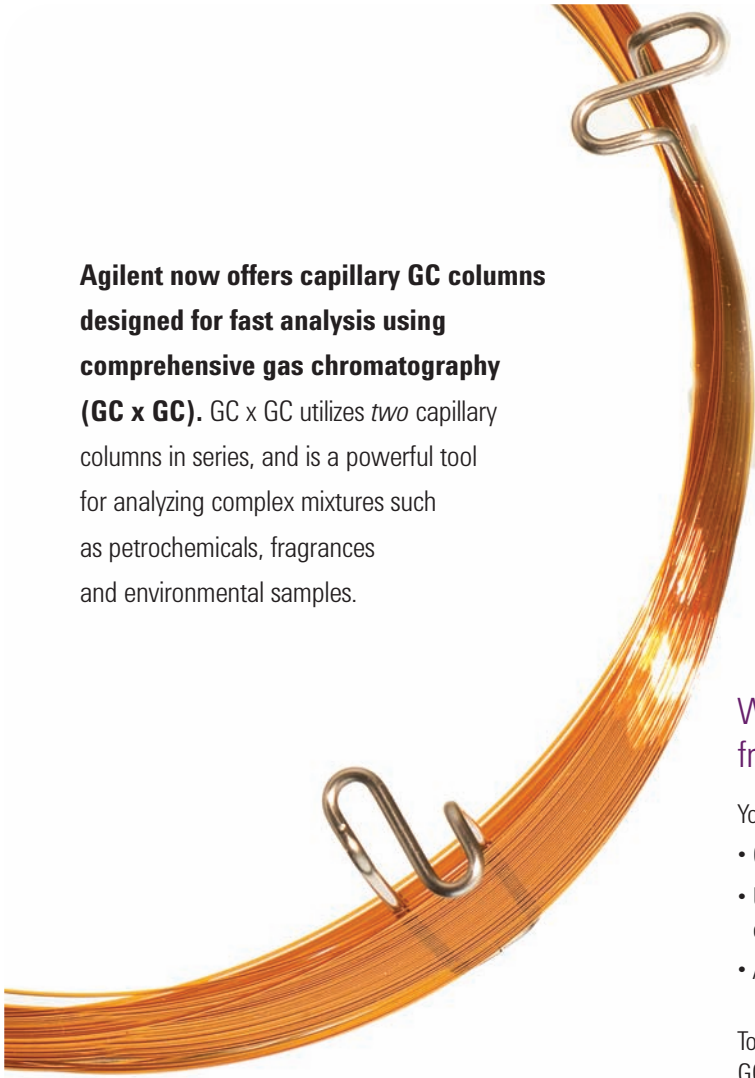
Agilent J&W High Efficiency Capillary GC Columns are part of your *total solution* for fast GC.

Agilent J&W High Efficiency Capillary GC Columns are compatible with Agilent 5890, 6890, 6850, and 7890 GC systems and detectors – including our **7890A GC**. What's more, the backflush and cooling capabilities of Agilent's **7890A GC** can further increase your sample throughput.

Keep in mind, too, that Agilent splitless liners, gold seals, QuickSwap restrictors, and fittings are engineered to work with your Agilent GC or GC/MS system. They are manufactured to our exact specifications to make sure your system performs to its full potential – while preventing contamination and leaks that can lead to costly downtime and jeopardize the integrity of your results.

To learn how Agilent's 7890A GC, together with our High Efficiency GC Columns, can take your results to the next level, go to www.agilent.com/chem/7890A





Agilent now offers capillary GC columns designed for fast analysis using comprehensive gas chromatography (GC x GC).

GC x GC utilizes *two* capillary columns in series, and is a powerful tool for analyzing complex mixtures such as petrochemicals, fragrances and environmental samples.

When you buy instruments, columns, and supplies from Agilent, you get more than just reliability.

You also get:

- Over 40 years of chromatography expertise.
- Unmatched technical support – on the Web, by phone or in person.
- A 90-day warranty from the date of shipment.

To learn more about Agilent J&W High Efficiency Capillary GC Columns – or Agilent products and services – visit us online or call toll free:

www.agilent.com/chem/HEcolumns2

1-800-227-9770, option 3, then option 3 again (in the US and Canada)

In other countries, please call your local Agilent Representative or Agilent Authorized Distributor.

Information, descriptions, and specifications in this publication are subject to change without notice.

© Agilent Technologies, Inc. 2008

Printed in the U.S.A. April 1, 2008

5989-8022EN

Our measure is your success.



Agilent Technologies