VOL 20.4

The Reporter

sigma-aldrich.com/TheReporter

New Equity Capillary GC Columns:
The Performance You Demand for Your Non-Polar Applications

GC users running non-polar applications in production and routine testing laboratories require consistent performance from their capillary GC column. Reproducible column to column performance increases your productivity, reduces your instrument downtime, and eliminates unnecessary troubleshooting. In this issue of the Reporter, we will provide an overview of the critical factors that concern GC users, discuss what influences their reproducibility, and introduce you to our new line of improved non-polar Equity columns. Future GC issues of the Reporter will discuss in more detail each of these important performance factors.

Critical Performance Factors

Non-polar column users state that resolution, analyte response, low bleed, and column life are critical column performance factors. The ability of a non-polar column, such as Supelco's new Equity-1 and Equity-5 columns, to consistently provide the performance you demand, column to column, time after time, is important. Keeping your instruments running samples at optimal levels and improving productivity requires the use of a reproducible performing product. Whether you change your column once a year or once a month, you rely on it to perform in a consistent manner. Inconsistent performance with regard to resolution of critical pairs, response of important analytes, bleed levels, and column life will reduce productivity and increase instrument downtime in your laboratory.

Consistent Column Performance

Many factors influence column to column reproducibility, however, they can be grouped into the areas of polymer chemistry, manufacturing process, and product testing. A stable, uniform, well-characterized polymer provides the starting point for excellent column to column reproducibility, but it is only the beginning. Stringent manufacturing procedures that are detailed and thoroughly documented are crucial. These procedures need to be performed by well trained, experienced people using state of the art equipment and facilities. The last step for consistent column to column performance is the validation or QA testing of the column. Stringent testing specifications ensure that all aspects of the polymer and manufacturing process have produced the desired, consistent performing capillary GC column.

(continued on page 4)

GC issue

Figure A. Reproducible Resolution Across Phase Lots and Manufacturing Batches on an Equity-5 Capillary GC Column

Column: 30m x 0.25mm ID, 0.25µm
Oven: 40°C (4 min.) to 325°C @ 10°C/min (5 min.)
Inj.: 250°C
MSD Interface: 325°C
Scan Range: 45-450 amu
Flow: 12.5psi constant pressure
Injection: 1.0µL, splitless
Sample: 25ng on-column of a 16 component semivolatile standard

1. Benzo (b) fluoranthene
2. Benzo (k) fluoranthene

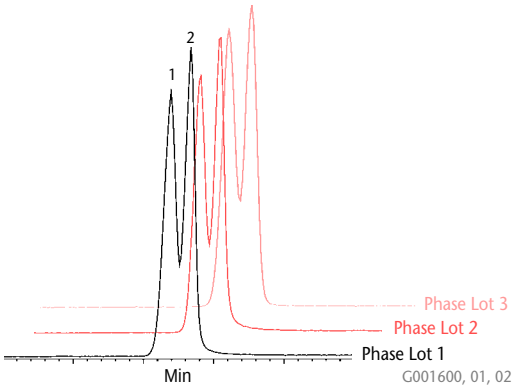
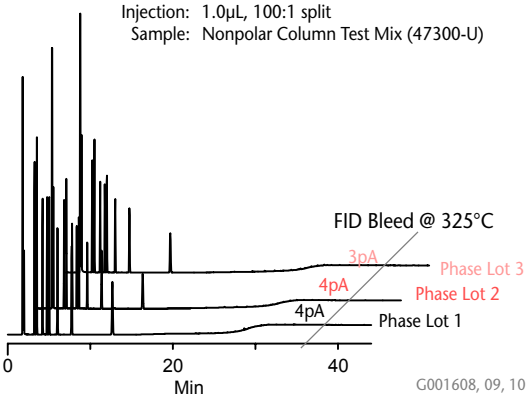


Figure B. Reproducible Low Column Bleed Across Phase Lots and Manufacturing Batches on an Equity-1 Capillary GC Column

Column: 30m x 0.25mm ID, 0.25µm
Oven: 110°C (14 min.) to 325°C (15 min) @ 15°C/min.
Inj.: 250°C
Det.: FID, 360°C
Flow: 30cm/sec. @ 110°C
Injection: 1.0µL, 100:1 split
Sample: Nonpolar Column Test Mix (47300-U)



CONTENTS

SUPELCO
a member of the Sigma-Aldrich family

T202004

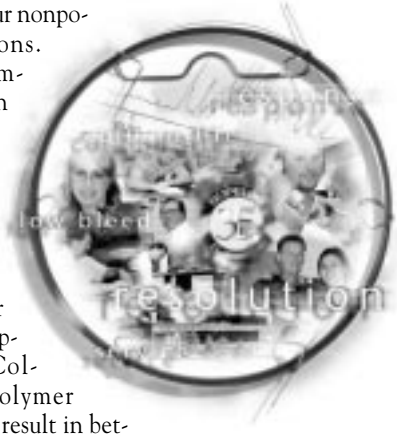
NEW PRODUCTS

Equity Capillary GC Columns

Equity Capillary GC Columns

The performance you demand…the service you deserve… from the company you trust.

Supelco's new and improved Equity Capillary GC Columns deliver the capillary GC column performance you demand for your nonpolar applications. Significant improvements in the polymer chemistry are at the heart of the enhanced performance you will receive with our new Equity Capillary GC Columns. The polymer improvements result in better bonding, higher thermal stability, and superior product reproducibility. If you use a non-polar column, try our new Equity line of improved capillary GC columns.



For more information request T402049.

Equity-1 Capillary GC Columns

Phase: bonded; poly(dimethylsiloxane)
Temp. Limits: 0.25 and 0.32mm ID: -60°C to 325/350°C
0.53mm ID: -60°C to 300/320°C (≤1.5µm Df)
-60°C to 260/280°C (>1.5µm Df)

	Length (m)	Df (µm)	Cat. No.
0.25mm ID	15	0.25	**28045-U**
	30	0.25	**28046-U**
	15	1.0	**28048-U**
	30	1.0	**28049-U**
0.32mm ID	15	0.25	**28054-U**
	30	0.25	**28055-U**
	30	1.0	**28057-U**
0.53mm ID	15	1.5	**28072-U**
	30	1.5	**28073-U**
	15	3.0	**28075-U**
	30	3.0	**28076-U**

Equity-5 Capillary GC Columns

Phase: bonded; poly(5% diphenyl/95% dimethylsiloxane)
Temp. Limits: 0.25 and 0.32mm ID: -60°C to 325/350°C
0.53mm ID: -60°C to 300/320°C (≤1.5µm Df)
-60°C to 260/280°C (>1.5µm Df)

	Length (m)	Df (µm)	Cat. No.
0.25mm ID	15	0.25	**28088-U**
	30	0.25	**28089-U**
	30	0.5	**28092-U**
0.32mm ID	15	0.25	**28096-U**
	30	0.25	**28097-U**
0.53mm ID	15	0.5	**28252-U**
	30	0.5	**28259-U**
	15	1.5	**28265-U**
	30	1.5	**28267-U**
	15	5.0	**28278-U**
	30	5.0	**28279-U**

FEATURED PRODUCTS

Capillary Injector Products for Agilent Technologies GCs

Therm-O-Ring Seals / Inlet Seals for Agilent/HP GCs

P000752

Injection Port Ferrule for Agilent Technologies GC Equipment

P000774

GC/MS Ferrule for Agilent Technologies GC Equipment

P000776

Therm-O-Ring™ Seals

High pressure Therm-O-Ring inlet seals for Agilent inlet liners provide superior GC performance at temperatures as high as 375°C. Supelco's proprietary formulation yields O-rings that do not stick to the injection port or fragment during removal. These rings are a superior replacement for Viton O-rings and are available exclusively from Supelco.

For more information request T395082, T400003, T401027.

Therm-O-Ring Seals, Pk. of 10	**21003-U**
Therm-O-Ring Seals, Pk. of 25	**21004-U**

Inlet Seals for Agilent Technologies GCs

Low cost, replacement inlet seals for Agilent GCs from Supelco reduce the need for cleaning and reuse. Supelco metal selection yields a better inlet seal. Seals are available in stainless steel and gold plated versions. Precise, computerized machining reduces dimensional variation that can occur with other seals.

For more information request T395082, T400006, T401027.

Stainless Steel HP Inlet Seals, Pk. of 2	**23316-U**
Stainless Steel HP Inlet Seals, Pk. of 10	**23317-U**
Stainless Steel HP Inlet Seals, Pk. of 100	**23363-U**
Gold Plated HP Inlet Seals, Pk. of 2	**23318-U**
Gold Plated HP Inlet Seals, Pk. of 10	**23319-U**

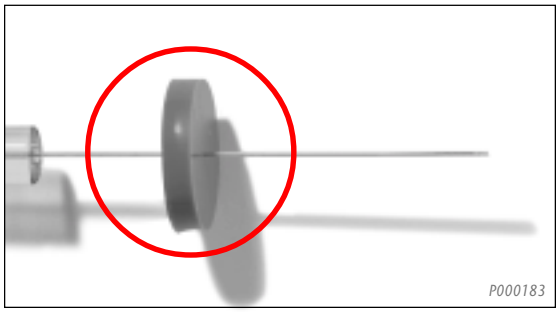
Exclusive LB-2 Low Bleed Septa

Supelco LB-2 septa are the industry benchmark. These septa are extremely low bleed over a wide range of inlet temperatures (100°C to 350°C). They come already conditioned and ready to use. LB-2 septa offer high puncture tolerance and easy penetration. They are ideal for autosamplers. The LB-2 septa formulation is exclusive to Supelco.

For more information request T395082 and T401027.

Thermogreen LB-2 Septa

Disc Diameter mm	Disc Diameter Inch	Qty.	Cat. No.
9.5	3/8	50	**20652**
11.0	7/16	50	**20654**
11.0	7/16	250	**23163**



P000183

FEATURED PRODUCTS (contd.)

Capillary Injector Products for Agilent Technologies GCs

Ferrules for Agilent Technologies GC Equipment

Use ferrules specially designed for Agilent Technologies instrumentation. They are available in either an M-4 (100% Graphite that have a maximum temperature limit of 450°C) or an M-2A (85% polyimide/15% graphite, maximum temperature limit of 350°C).

For more information request T401027.

Ferrules for Agilent Technologies GCs

		Capillary Column Ferrules (1/16" Fitting) Column ID		
		0.53mm	0.32mm	0.20-0.25mm
Ferrule Type	Qty.	Cat. No.	Cat. No.	Cat. No.
Injection Port				
M-2A	10	**24801-U**	**24802-U**	**24803-U**
	50	**24804-U**	**24806-U**	**24807-U**
M-4	10	**24808-U**	**24809-U**	**24811-U**
	50	**24812-U**	**24813-U**	**24819-U**
GC/MS				
M-2A	10	**24823-U**	**24824-U**	**24826-U**
	Ferrule ID	**0.8mm**	**0.5mm**	**0.4mm**

Column Nuts for Agilent Technologies GCs

for 1/16" ferrules, Pk of 2 ..... **24833-U**

LITERATURE

Equity Capillary GC Columns

The performance you demand…the service you deserve… from the company you trust.

This brochure introduces Supelco's new line of improved Equity non-polar capillary columns. Equity-1 and Equity-5 columns offer the consistent resolution, analyte response, low bleed, and column life you demand for your non-polar applications.

For more information request T402049.

A Tool for Selecting an Adsorbent for Thermal Desorption Applications

There are a variety of adsorbents used in the field of thermal desorption. Often choosing the right adsorbent can be difficult. The goal in selecting the proper adsorbent is to choose one that can retain a specific or group of analytes for a specified sample volume. However, just as important, the adsorbent must also be able to release the analytes during the desorption process. This report sheds some light on choosing the right adsorbent by demonstrating the relative differences between those most commonly used. Supelco investigated 24 adsorbents in the study and generated easy to use color-coded charts for each of the adsorbents.

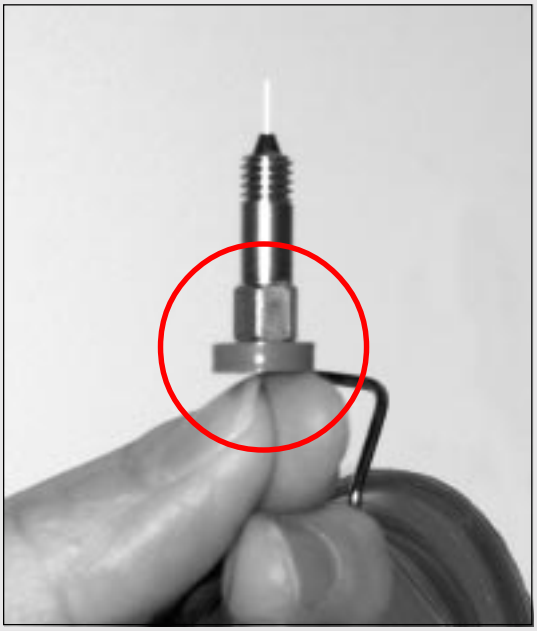
*For more information visit **sigma-aldrich.com/thereporter** and open the link for T402025.*

GAS CHROMATOGRAPHY PERFORMANCE TIP

Proper Column Installation in the GC Injector

Have you ever installed a GC column only to have it slip down into the ferrule once you tighten down on the column nut? Many times, you will not discover this until the first analytical run when you see tailing peaks or poor response. To guarantee you have maintained the proper column position during installation, try using a Thermogreen LB-2 septum to hold the column nut in a fixed position. It works like this…when installing your column, insert the injector end of the column through the septum. Next, slip the column nut and ferrule over the end. The septum will act as a "shelf" for the column nut to rest on. Make a clean, square cut on the end of the column and then slide the septum so that the column nut and ferrule are in the proper position as specified by your GC manufacturer. When installing the column in the inlet and tightening down, hold the column by the septum. This will keep the column from slipping down into the ferrule during the installation process and ensure the proper column installation.

For more information request T395082.



*All literature mentioned in this issue can be obtained from the website, **sigma-aldrich.com/TheReporter**, by completing the Literature Request section on the reply card, or by calling our Technical Service Dept.*

New Equity Capillary GC Columns...

(continued from page 1)

The Equity Advantage

Supelco's new and improved Equity columns deliver the capillary GC column performance you demand for your nonpolar applications. Significant improvements in the polymer chemistry are at the heart of the enhanced performance you will receive with the Equity columns. The polymer improvements result in better cross-linking, higher thermal stability, and superior product reproducibility. (Refer to Figures A and B on page 1). Each Equity column delivers the resolution you need, the analyte response you require, the low bleed you expect, and the column life you count on. The reliable performance that Equity columns provide will minimize time consuming method adjustments and troubleshooting with column changes which means more tests run with higher confidence.

The Recommendation

We recommend the new Equity-1 and Equity-5 capillary GC columns as the column of choice for all your general purpose, special purpose GC/MS, or environmental nonpolar applications. If you use a non-polar capillary column, try our new line of Equity columns. The performance you demand teamed with the service you deserve, from the company you trust.

For more information, request T402049.

CASE STUDY 2

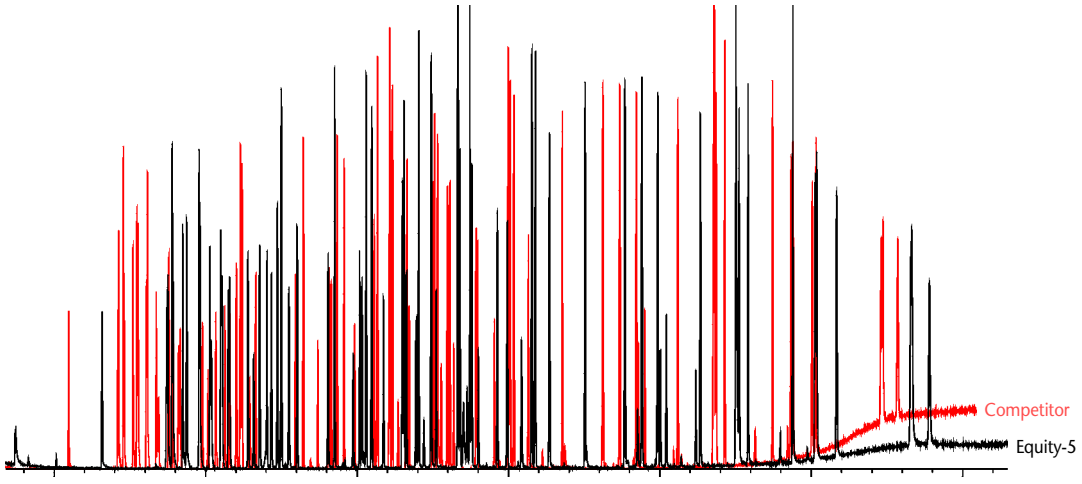
CASE STUDY

Improved GC/MS Column Bleed

A chemist at a commercial environmental laboratory is analyzing semivolatiles by GC/MS following USEPA Method 8270. The chemist is using a 30 meter, 0.25mm ID, 0.25µm Df, poly(5% diphenyl/95% dimethylsiloxane) column. She uses a programmed final temperature of 325°C, which allows her to reduce the total run time, generating more billable samples per calibration. She recently purchased a competitor's specialty tested environmental column with claims of a high temperature limit, excellent thermal stability, and low bleed. The temperature limits were listed as 325°C for isothermal conditions and a 350°C for programmed conditions. After installing and conditioning the column, she ran a 5 nanogram 8270 standard, which is the lowest in her calibration curve. The chemist typically used a low-level standard to judge the relative magnitude of the GC/MS column bleed. The results were not what she expected or required. This column showed an unacceptable high baseline at her upper temperature of 325°C. She contacted Supelco's Technical Service and inquired about an alternative low-bleed GC/MS column for her application. We recommended trying our new low bleed Equity-5 column and she agreed. The Equity-5 column also has a 325°C temperature limit for isothermal conditions and a 350°C limit for programmed conditions. Upon trying the new Equity-5 column, she found the GC/MS bleed was significantly lower while still achieving the resolution and analyte response she required. (See Figure C)

For more information request T402049.

Figure C. Improved GC/MS Column Bleed on Equity-5



sigma-aldrich.com/supelco

Order/Customer Service 800-247-6628, 800-325-3010 ● Fax 800-325-5052 ● E-mail supelco@sial.com

Technical Service 800-359-3041, 814-359-3041 ● Fax 800-359-3044, 814-359-5468 ● E-mail techservice@sial.com

SUPELCO ● Supelco Park, 595 North Harrison Road, Bellefonte, PA 16823-0048 ● 814-359-3441

ISO 9001 REGISTERED

We are committed to the success of our Customers, Employees and Shareholders through leadership in ***Life Science****,* ***High Technology*** *and* ***Service****.*

The SIGMA-ALDRICH Family SIGMA ALDRICH Fluka Riedel-de Haën SUPELCO

T202004
ENR