

# Capillary GC Columns and Guard Columns/Retention Gaps

Fast GC Columns: *Ionic Liquid Columns*

## Ionic Liquid Columns

- **SLB-IL59:** a polar column. Maximum temperature of 300 °C (isothermal or programmed).
- **SLB-IL61:** a polar column. Maximum temperature of 290 °C (isothermal or programmed).
- **SLB-IL76:** a highly polar column. Maximum temperature of 270 °C (isothermal or programmed).
- **SLB-IL82:** a highly polar column. Maximum temperature of 270 °C (isothermal or programmed).
- **SLB-IL100:** a highly polar column. Maximum temperature of 230 °C (isothermal or programmed).
- **SLB-IL111:** an extremely polar column. Maximum temperature of 270 °C (isothermal or programmed).

I.D. (mm)	d <sub>f</sub> (µm)	L (m)	Beta Value	Cat. No.	Qty
<b>SLB®-IL59 Capillary GC Column</b>					
0.10	0.08	15	313	<a href="#">28880-U</a>	1 ea
<b>SLB®-IL61 Capillary GC Column</b>					
0.10	0.08	15	313	<a href="#">29484-U</a>	1 ea
<b>SLB®-IL76 Capillary GC Column</b>					
0.10	0.08	15	313	<a href="#">28909-U</a>	1 ea
<b>SLB®-IL82 Capillary GC Column</b>					
0.10	0.08	15	313	<a href="#">29477-U</a>	1 ea
<b>SLB®-IL100 Capillary GC Column</b>					
0.18	0.14	20	313	<a href="#">28883-U</a>	1 ea
<b>SLB®-IL111 Capillary GC Column</b>					
0.10	0.08	15	313	<a href="#">28925-U</a>	1 ea

## General Purpose Columns

- **Equity-1:** For general purpose non-polar Fast GC applications. Maximum temperature of 325 °C (isothermal) or 350 °C (programmed).
- **Equity-5:** For general purpose non-polar Fast GC applications. Maximum temperature of 325 °C (isothermal) or 350 °C (programmed).
- **SUPELLOWAX 10:** For general purpose polar Fast GC applications. Maximum temperature of 280 °C (isothermal or programmed).

I.D. (mm)	d <sub>f</sub> (µm)	L (m)	Beta Value	Cat. No.	Qty
<b>Equity®-1 Capillary GC Column</b>					
0.10	0.10	15	250	<a href="#">28039-U</a>	1 ea
<b>Equity®-5 Capillary GC Column</b>					
0.10	0.10	15	250	<a href="#">28083-U</a>	1 ea
<b>SUPELLOWAX® 10 Capillary GC Column</b>					
0.10	0.10	5	250	<a href="#">25025-U</a>	1 ea
	0.10	10	250	<a href="#">25026-U</a>	1 ea
	0.10	15	250	<a href="#">24343</a>	1 ea

## GCxGC Columns

GCxGC is one of the fastest growing areas in analytical chemistry. The level of detail it can provide cannot be equaled by any other chromatographic technique. It employs two columns in series, separated by a modulator. The role of the modulator is to collect fractions from the first column (often called the primary column, first dimension column, or 1° column) and focus them onto the second column (often called the secondary column, second dimension column, or 2° column). Primary columns tend to be 30 m x 0.25 mm I.D., whereas 1-2 m x 0.10 mm I.D. is common for secondary columns. Common detectors, including MS, can be used.

## Column Selection Strategy

One key to the successful operation of GCxGC is that the two columns must have orthogonal selectivity, that is, they must utilize different retention mechanisms. The more different (more orthogonal), the better the overall performance will be. Two strategies can be used for GCxGC column selection to achieve orthogonal selectivity.

### Non-Polar to Polar Strategy

Analytes are separated on a non-polar column in the first dimension, and on a polar column in the second dimension. This strategy is useful for complex samples, such as gasoline.

### Polar to Non-Polar Strategy

Analytes are separated on a polar column in the first dimension, and on a non-polar column in the second dimension. This strategy is useful for complex samples, such as FAMES.

## Non-Polar Primary (1°) Columns

Non-polar GC columns are made with the least selective GC stationary phases. Interactions are primarily dispersive (van der Waals forces). Phases with phenyl functional groups can also undergo a moderate amount of  $\pi$ - $\pi$  interactions. Elution order generally follows the boiling points of the analytes. Choices are:

- **SLB-5ms:** 5% phenyl, the best choice due to high temperature limits. Maximum temperature of 340 °C (isothermal) or 360 °C (programmed).
- **Equity-5:** alternative 5% phenyl choice. Maximum temperature of 325 °C (isothermal) or 350 °C (programmed).
- **SPB-5:** alternative 5% phenyl choice. Maximum temperature of 320 °C (isothermal or programmed).
- **PTA-5:** specially-engineered 5% phenyl for basic compounds. Maximum temperature of 320 °C (isothermal or programmed).
- **SAC-5:** specially-engineered 5% phenyl for sterols. Maximum temperature of 320 °C (isothermal or programmed).
- **Equity-1:** 100% methyl, provides less selectivity than obtained with a 5% phenyl. Maximum temperature of 325 °C (isothermal) or 350 °C (programmed).
- **SPB-1:** alternative 100% methyl choice. Maximum temperature of 320 °C (isothermal or programmed).

I.D. (mm)	d <sub>f</sub> (µm)	L (m)	Beta Value	Cat. No.	Qty
<b>SLB®-5ms Capillary GC Column</b>					
0.25	0.10	30	625	<a href="#">28467-U</a>	1 ea
	0.25	30	250	<a href="#">28471-U</a>	1 ea
	0.50	30	125	<a href="#">28473-U</a>	1 ea
<b>Equity®-5 Capillary GC Column</b>					
0.25	0.25	30	250	<a href="#">28089-U</a>	1 ea
	0.50	30	125	<a href="#">28092-U</a>	1 ea
<b>SPB®-5 Capillary GC Column</b>					
0.25	0.25	30	250	<a href="#">24034</a>	1 ea
<b>PTA-5 Capillary GC Column</b>					
0.25	0.50	30	125	<a href="#">24277</a>	1 ea