

Porous Polymer Columns

Porous polymers are unique, highly retentive stationary phases with a wide application range that are able to elute both polar and nonpolar compounds. They are very hydrophobic, so water has no impact on retention times and even elutes as a good chromatographic peak. The Q-BOND is our most nonpolar and widely used porous polymer column; functional groups can be added to increase polarity (i.e., QS-, S-, and U-BOND). The process used to manufacture porous polymer PLOT columns causes the particles to adhere strongly to the walls of the tubing, so there is virtually no particle generation. You get reproducible performance from column to column, including selectivity and flow.

Rt[®]-Q-BOND Columns (fused silica PLOT)

100% divinylbenzene

- Nonpolar PLOT column incorporating 100% divinylbenzene.
- Excellent for analysis of C1 to C3 isomers and alkanes up to C12.
- High retention for CO₂ simplifies gas analysis; CO₂ and methane separated from O₂/N₂/CO. (Note: O₂/N₂/CO not separated at room temperature.)
- Use for analysis of oxygenated compounds and solvents.
- Maximum temperature of 300 °C.

ID	df	temp. limits	15-Meter cat.#	30-Meter cat.#
0.25 mm	8 µm	to 280/300 °C	19764	19765
0.32 mm	10 µm	to 280/300 °C	19743	19744
0.53 mm	20 µm	to 280/300 °C	19741	19742

similar phases

HP PLOT Q, CP-PoraPLOT Q, CP-PoraBOND Q, Supel-Q-PLOT, AT-Q

Our porous polymer PLOT columns are not moisture sensitive, making them ideal for applications where moisture is of major concern.

Restek porous polymer PLOT columns cover a wide range of polarities

least polar

Q-BOND

QS-BOND

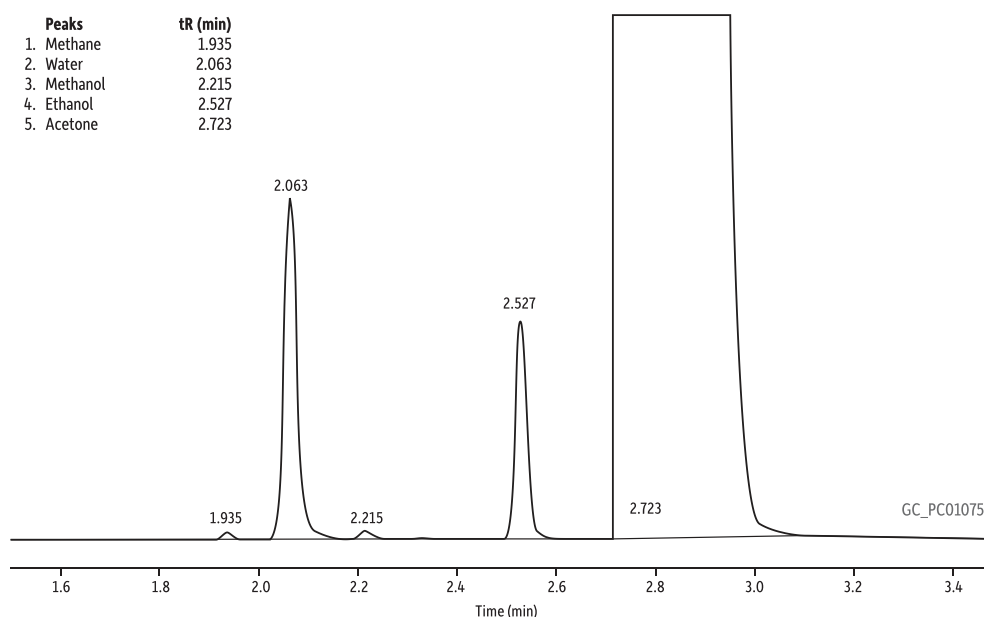
S-BOND

U-BOND

most polar

Water and Ethanol in Acetone on Rt[®]-Q-BOND

Peaks	tR (min)
1. Methane	1.935
2. Water	2.063
3. Methanol	2.215
4. Ethanol	2.527
5. Acetone	2.723



Column Rt[®]-Q-BOND, 30 m, 0.53 mm ID, 20 µm (cat.# 19742)
Sample
Diluent: Acetone
Conc.: 0.5% Water and ethanol
Injection
Inj. Vol.: 3 µL split (split ratio 11:1)
Liner: Splitless taper (4 mm) w/wool (cat.# 22405)
Inj. Temp.: 250 °C
Oven
Oven Temp.: 200 °C (hold 4 min)
Carrier Gas He, constant linear velocity
Linear Velocity: 28.7 cm/sec @ 200 °C
Detector TCD @ 260 °C

Rt®-QS-BOND Columns (fused silica PLOT)

porous divinylbenzene homopolymer

- Intermediate polarity PLOT column incorporating low 4-vinylpyridine.
- Separates ethane, ethylene, and acetylene to baseline.
- Designed for the best possible separation between all C2 isomers.
- Stable to 250 °C.

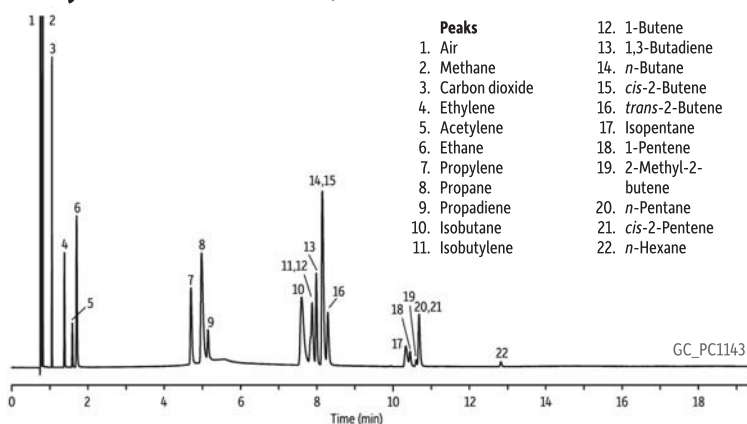
ID	df	temp. limits	15-Meter cat.#	30-Meter cat.#
0.25 mm	8 µm	to 250 °C	19767	19768
0.32 mm	10 µm	to 250 °C	19739	19740
0.53 mm	20 µm	to 250 °C	19737	19738

similar phases

GS-Q



Refinery Gas Mixture on Rt®-QS-BOND



- Peaks**
- | | |
|-------------------|----------------------------|
| 1. Air | 12. 1-Butene |
| 2. Methane | 13. 1,3-Butadiene |
| 3. Carbon dioxide | 14. <i>n</i> -Butane |
| 4. Ethylene | 15. <i>cis</i> -2-Butene |
| 5. Acetylene | 16. <i>trans</i> -2-Butene |
| 6. Ethane | 17. Isopentane |
| 7. Propylene | 18. 1-Pentene |
| 8. Propane | 19. 2-Methyl-2-butene |
| 9. Propadiene | 20. <i>n</i> -Pentane |
| 10. Isobutane | 21. <i>cis</i> -2-Pentene |
| 11. Isobutylene | 22. <i>n</i> -Hexane |

Column Rt®-QS-BOND, 30 m, 0.53 mm ID, 20 µm (cat.# 19738)
Sample Refinery gas standard
Injection
 Inj. Vol.: 20 µL split
 Liner: 2 mm (cat.# 20712)
 Inj. Temp.: 200 °C
 Split Vent
 Flow Rate: 35 mL/min
Oven
 Oven Temp.: 40 °C (hold 2 min) to 225 °C at 15 °C/min (hold 5 min)
Carrier Gas He, constant pressure (11.5 psi, 79.3 kPa)
 Linear Velocity: 68 cm/sec @ 40 °C
Detector TCD @ 225 °C
Make-up Gas He
 Type: He
 Data Rate: 20 Hz
 Sensitivity Mode: He/H₂
Instrument HP5890 GC

Rt®-S-BOND Columns (fused silica PLOT)

porous divinylbenzene homopolymer

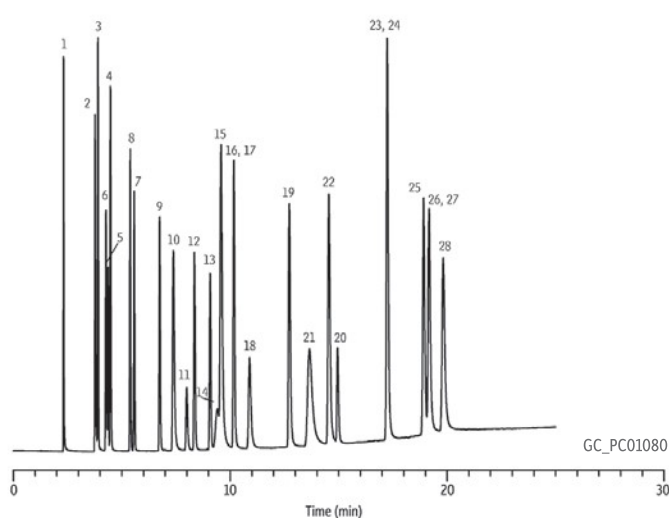
- Midpolarity PLOT column, incorporating high 4-vinylpyridine.
- Use for the analysis of nonpolar and polar compounds.
- Stable to 250 °C.

ID	df	temp. limits	15-Meter cat.#	30-Meter cat.#
0.25 mm	8 µm	to 250 °C	19769	19770
0.32 mm	10 µm	to 250 °C	19747	19748
0.53 mm	20 µm	to 250 °C	19745	19746

similar phases

CP-PoraPLOT S

Solvent Mixture on Rt®-S-BOND



- Peaks**
- | | |
|---------------------------------------|-------------------------|
| 1. Methanol | 15. Benzene |
| 2. Ethanol | 16. 1,2-Dimethoxyethane |
| 3. Acetonitrile | 17. Trichloroethylene |
| 4. Acetone | 18. 1,4-Dioxane |
| 5. Dichloromethane | 19. Pyridine |
| 6. 1,1-Dichloroethene | 20. Dimethylformamide |
| 7. Nitromethane | 21. Methylcyclohexane |
| 8. <i>trans</i> -1,2-Dichloroethylene | 22. Toluene |
| 9. <i>cis</i> -1,2-Dichloroethylene | 23. 2-Hexanone |
| 10. Tetrahydrofuran | 24. Chlorobenzene |
| 11. Chloroform | 25. Ethylbenzene |
| 12. Ethyl acetate | 26. <i>m</i> -Xylene |
| 13. 1,2-Dichloroethane | 27. <i>p</i> -Xylene |
| 14. 1,1,1-Trichloroethane | 28. <i>o</i> -Xylene |

Column Rt®-S-BOND, 30 m, 0.53 mm ID, 20 µm (cat.# 19746)
Sample Solvent mixture
Injection
 Inj. Vol.: 1.0 µL split
 Liner: Taper (4 mm) (cat.# 20798)
 Inj. Temp.: 200 °C
 Split Vent
 Flow Rate: 100 mL/min
Oven
 Oven Temp.: 120 °C to 220 °C at 5 °C/min (hold 5.0 min)
Carrier Gas H₂, constant pressure (4.2 psi, 29.0 kPa)
 Linear Velocity: 40 cm/sec @ 120 °C
Detector FID @ 220 °C

similar phases

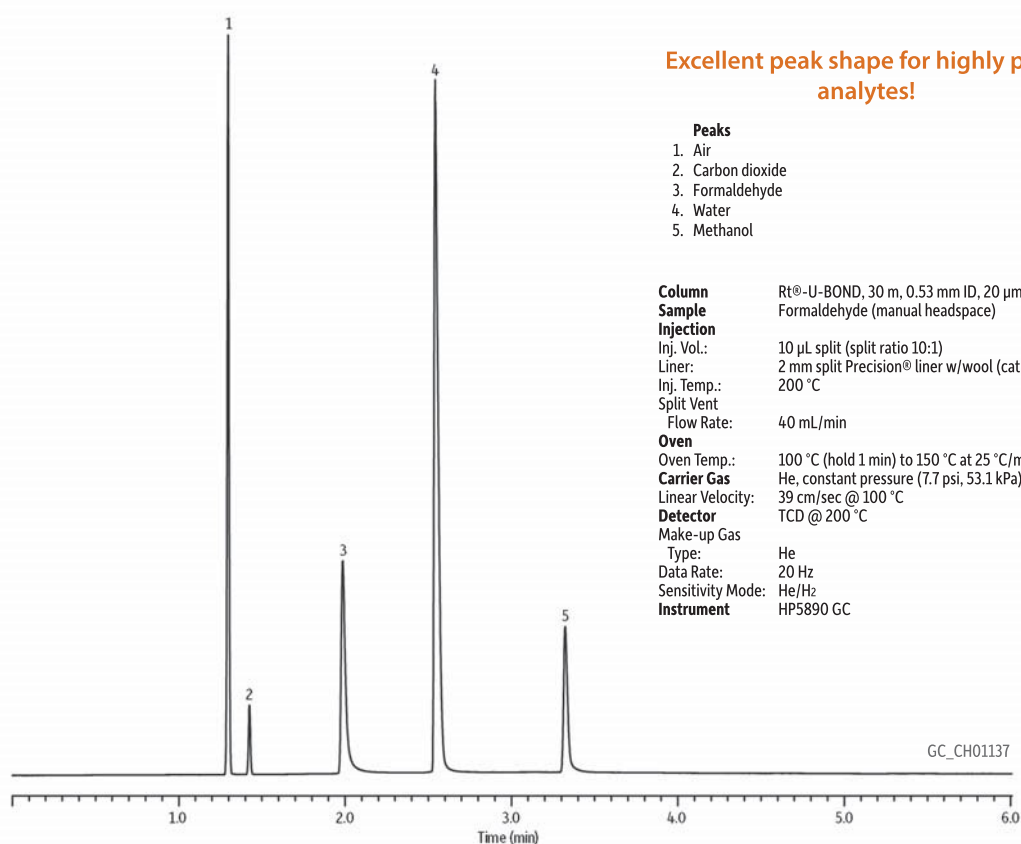
HP-PLOT U, CP-PoraPLOT U, CP-PoraBOND U

**Rt[®]-U-BOND Columns** (fused silica PLOT)

divinylbenzene ethylene glycol/dimethylacrylate

- Restek's highest polarity porous polymer column.
- Polar PLOT column, incorporating divinylbenzene ethylene glycol/dimethylacrylate.
- Highly inert for the analysis of polar and nonpolar compounds.
- Stable to 190 °C.

ID	df	temp. limits	15-Meter cat.#	30-Meter cat.#
0.25 mm	8 µm	to 190 °C	19771	19772
0.25 mm	12 µm	to 190 °C	19782	—
0.32 mm	10 µm	to 190 °C	19751	19752
0.53 mm	20 µm	to 190 °C	19749	19750

Formaldehyde on Rt[®]-U-BOND**PLOT Column Particle Trap**

- Includes two Press-Tight[®] connectors and a 2.5 m column.
- Protects detector and valves; connects between column and detector or valve.
- Eliminates detector spikes and scratches in valve rotors.

The technology used to adhere particles in PLOT columns is excellent; however, it is still possible for particles to dislodge when extreme pressure shocks and gas flow changes occur. This sometimes happens when valve switching or backflushing is used. In those cases, using particle traps is recommended.



Description	qty.	cat.#
PLOT Column Particle Trap, 2.5 m, 0.32 mm ID with 2 Press-Tight Connectors	ea.	19753
PLOT Column Particle Trap, 2.5 m, 0.53 mm ID with 2 Press-Tight Connectors	ea.	19754