

Bonded Stationary Phases

We combined our stationary phase synthesis experience with our unique Silcoport™ packing deactivation process to create bonded phase packings that provide longer lifetimes, lower bleed, and shorter conditioning times.

We offer bonded methyl silicone phases (Rtx®-1 and Rtx®-5) and a bonded Carbowax® phase (Stabilwax®) completely cross-linked on Silcoport™ packing. We have evaluated Rtx®-1 and Rtx®-5 bonded packed column phases side-by-side with nonbonded phases of comparable polarity; the bonded phases last longer than the equivalent nonbonded packing materials. Table I shows retention times on an Rtx®-1 bonded packed column are highly repeatable after only 30 minutes conditioning.

Table I Highly repeatable retention times demonstrate the Rtx®-1 bonded packed column is stable after only 30 minutes of conditioning.

Hydrocarbon	Retention Time			
	Min.	Max.	Mean	Stand. Dev.
C5	0.241	0.243	0.242	0.001
C6	0.493	0.497	0.495	0.002
C10	5.746	5.765	5.752	0.005
C20	18.482	18.491	18.486	0.004
C28	25.093	25.103	25.098	0.004
C40	32.160	32.171	32.166	0.004
C44	34.316	34.328	34.326	0.007

n=9 columns

Who says packed columns are old technology? Not Restek!
 By combining flexible Siltek® tubing with low-bleed bonded phases, we have made the most significant improvements in packed column technology in more than 25 years!

Columns available in 0.75, 1, 2, 3.2, & 5.2mm ID.

Bonded phase packings decrease conditioning times and bleed, and increase column lifetime.

Columns can be configured for all GC models.

Siltek® treatment makes the stainless steel surface more inert than glass.

The most complete line of packing materials available.



Barry Burger
Innovations Chemist
15+ years of service!

Bonded Packed Column Stationary Phases

- Short conditioning times.
- Low bleed levels.
- Higher sensitivities.
- Longer column lifetimes.
- Unsurpassed inertness for active compounds.

Bonded phases are used in capillary columns because they provide a dramatic increase in column quality. To truly bridge the gap between traditional packed columns and capillary columns, it was necessary to develop bonded liquid phases for packed columns. Packed column chromatographers can expect shorter conditioning times, lower bleed, and longer column lifetimes by using Restek bonded phase packed columns.

Bonded phases also last much longer than nonbonded phases. Bonded phases are more resistant to oxidation than nonbonded phases because of the stronger intermolecular forces produced by cross-linking. Because the material is thoroughly cross-linked, the phase will not sag, as often happens with nonbonded phases. Figure 1 shows a comparison of a bonded and a nonbonded methyl silicone column after 170 temperature cycles. The results show the impressive durability of bonded phases.

Restek's packed columns deliver the 1-2-3 PUNCH!

1. Bonded stationary phases mean short conditioning times, low bleed, and unsurpassed column lifetimes.

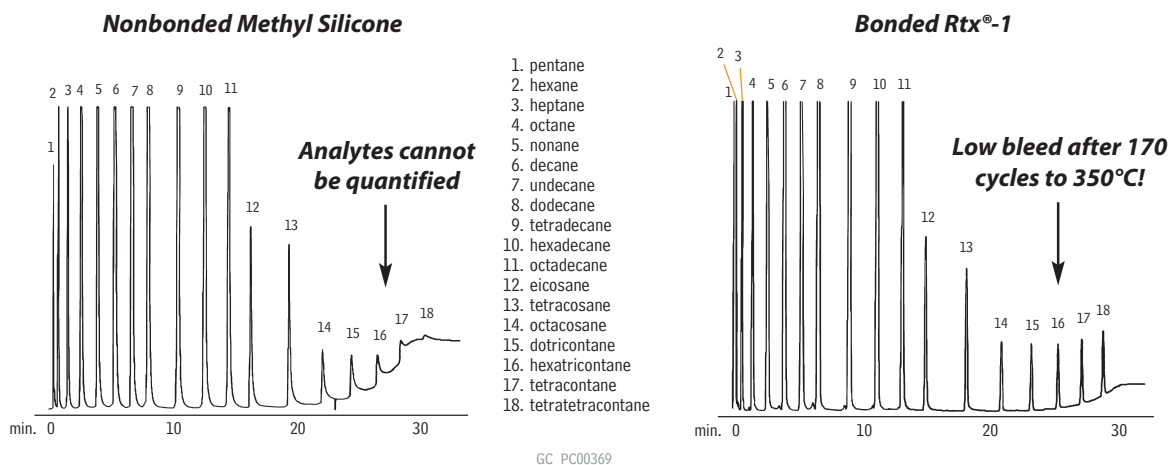
2. SilcoSmooth™ tubing provides the inertness of glass and the durability of stainless steel.

3. Silcoport™ diatomaceous earth provides unsurpassed inertness for trace analysis.

Equivalent Liquid Phases

Rtx®-1	BP-1, CC-1, CP-Sil 5CB, DB-1, DC-200, GE-SF-96, HP-1, HP-101, OV-1, OV-101, RSK-150, RH-1, SE-30, SP-2100, SPB-1, UCC W-98
Rtx®-5	BP-5, CB-5, CC-5, CP-Sil 8CB, DB-5, HP-5, OV-73, SE-52, SE-54, SPB-5, Ultra-5
Stabilwax®	BP-20, CP-Wax, CW-20, DB-Wax, HP-Innowax, PE-Wax, Supelcowax-10

Figure 1 Bonded packed columns exhibit longer lifetime than nonbonded packed columns.



25" x 1/8" x 2mm ID Rtx®-1 Sim Dist 2887 SilcoSmooth™ stainless steel (cat.# 80000-800)
1.0µl direct injection, 1–12% (w/w) each component
Oven temp.: 35°C to 350°C @ 10°C/min. (hold 5 min.)
Inj. & det. temp.: 350°C
Carrier gas: helium @ 25mL/min.
FID sensitivity: 256 x 10⁻¹¹ AFS

cat.# 31674 (1% each listed analyte in CS₂) and cat.# 31675 (5% each, neat) meet requirements of ASTM D2887-01.

for custom
columns

see page 127

please **note**

These columns are for on-column injections. For not-on-column configuration, add suffix -901.

Bonded Packed Column Stationary Phases

- Low bleed levels.
- Longer column lifetimes.
- Short conditioning times.

Bonded Phase on 100/120 Silcoport™ W	Stainless Steel Tubing				SilcoSmooth™ Tubing**			
	L (ft.)	OD (in.)	ID (mm)	cat.#*	L (m)	OD (in.)	ID (mm)	cat.#*
3% Rtx®-1	6	1/8	2.1	80441-	2	1/8	2	80401-
10% Rtx®-1	6	1/8	2.1	80442-	2	1/8	2	80405-
20% Rtx®-1	6	1/8	2.1	80443-	2	1/8	2	80409-
3% Rtx®-5	6	1/8	2.1	80444-	2	1/8	2	80477-
10% Rtx®-5	6	1/8	2.1	80445-	2	1/8	2	80478-
20% Rtx®-5	6	1/8	2.1	80446-	2	1/8	2	80479-
5% Rtx®-Stabilwax®	6	1/8	2.1	80447-	2	1/8	2	80415-
10% Rtx®-Stabilwax®	6	1/8	2.1	80448-	2	1/8	2	80416-
20% Rtx®-Stabilwax®	6	1/8	2.1	80449-	2	1/8	2	80417-
Rtx®-1 SimDist 2887***	25"	1/8	2.1	80450-	25"	1/8	2	80000-

Chromosorb®-Based Packed Columns

On 100/120 Silcoport™ W***	Stainless Steel Tubing				SilcoSmooth™ Tubing**			
	L (ft.)	OD (in.)	ID (mm)	cat.#*	L (m)	OD (in.)	ID (mm)	cat.#*
3% Rt™-101	6	1/8	2.1	80461-	2	1/8	2	80400-
3% Rt™-2100	6	1/8	2.1	80462-	2	1/8	2	80420-
5% Rt™-1200/1.75% Bentone 34	6	1/8	2.1	80463-	2	1/8	2	80125-
5% Rt™-1200/5% Bentone 34	6	1/8	2.1	80464-	2	1/8	2	80129-

please **note**

Temperature limits for stationary phases are listed on page 124.

On Chromosorb® PAW	Mesh	Stainless Steel Tubing			SilcoSmooth™ Tubing**				
		L (ft.)	OD (in.)	ID (mm)	cat.#*	L (m)	OD (in.)	ID (mm)	cat.#*
10% TCEP	100/120	8	1/8	2.1	80465-	2.5	1/8	2	80126-
23% Rt™-1700	80/100	30	1/8	2.1	80466-	9.2	1/8	2	80128-

Porous Polymers

Restek offers a full range of porous polymers, including HayeSep®, Porapak, and Chromosorb® Century Series polymers and Tenax TA packing, for analyses of volatile components and light solvents. To ensure fast stabilization times, each lot of packing is extensively solvent extracted and conditioned. Our QA test procedures give you the confidence that every batch you purchase will deliver consistent column-to-column performance.

Porous Polymer Packed Columns

also **available**

Chromosorb®, Porapak, HayeSep®, and Tenax packing materials. See pages 122-123.

Porous Polymers 80/100 Mesh	Stainless Steel Tubing				SilcoSmooth™ Tubing**			
	L (ft.)	OD (in.)	ID (mm)	cat.#*	L (m)	OD (in.)	ID (mm)	cat.#*
HayeSep® Q	6	1/8	2.1	80467-	2	1/8	2	80433-
Porapak Q	6	1/8	2.1	80468-	2	1/8	2	80427-
Porapak QS	6	1/8	2.1	80469-	2	1/8	2	80426-
Porapak R	6	1/8	2.1	80470-	2	1/8	2	80425-
Chromosorb® 101	6	1/8	2.1	80471-	2	1/8	2	80435-
Chromosorb® 102	6	1/8	2.1	80472-	2	1/8	2	80434-

*Please add column instrument configuration suffix number to cat.# when ordering. See chart on the next page.

**Siltek®-treated stainless steel.

***Modified version of Chromosorb® W; highest inertness, most consistent performance.