

New GC Column for PCB Congeners or Aroclor® Mixes: Rtx®-PCB

Exclusive Polymer with Unique Selectivity



by Gary Stidsen, GC Columns Marketing Manager

- Unique polymer for PCBs analysis by GC/ECD or GC/MS.
- Good results for other semivolatiles.
- Low polarity and inertness for active compounds.
- Thermally stable to 340°C.

Rtx®-PCB columns contain a proprietary polymer that has provided unique separations for PCB congeners, and can be used with electron capture detection or mass spectrometry. Figure 1 shows the excellent peak shape obtained for the PCB congeners in several Aroclor® mixes. In our initial review of data for these columns, we dis-

covered that by using an Rtx®-PCB column in a GC/MS analysis, European PCB congeners can be analyzed without interference from other congeners. Table 1 is a shortened list of the PCB congeners, showing those that elute near the European PCB congeners, which are indicated by an "x".

Table 1 Coelutions do not interfere with analysis of European PCB congeners ("x") on Rtx®-PCB: only congeners not measurable by MS are indicated in boxes.

Eur	IUPAC #	Cl #	T _x (min.)	Resolution	Assessment
	53	4	14.11		
	31	3	14.14	0.5	
x	28	3	14.23	1.4	Measurable by MS
	33	3	14.27	0.6	
	51	4	14.29	0.4	
	20	3	14.30	0.1	
	45	4	14.54	3.8	
	46	4	14.71		
	43	4	14.88	2.7	
x	52	4	14.94	1.0	Measurable by MS
	48	4	15.01	1.2	
	49	4	15.08	1.0	
	89	5	17.29		
	84	5	17.30	0.2	
	56	4	17.34	0.6	
x	101	5	17.35	0.2	Measurable by MS
	99	5	17.50	2.3	
	60	4	17.52	0.4	
	123	5	19.18		
	109	5	19.19	0.2	
	134	6	19.24	0.7	
	133	6	19.28	0.7	
x	118	5	19.35	1.0	Measurable by MS
	131	6	19.35	0.0	
	146	6	19.47	1.9	
	122	5	19.53	1.0	
	114	5	19.65	1.8	
x	153	6	19.66	0.2	
	132	6	19.77	1.7	
	179	7	19.88	1.8	
	130	6	20.31		
	164	6	20.33	0.3	
	178	7	20.45	1.9	
x	138	6	20.47	0.3	Measurable by MS
	163	6	20.51	0.6	
	129	6	20.56	0.7	
	158	6	20.60	0.6	
	172	7	21.99		
	156	6	22.07	1.3	
	157	6	22.18	1.6	
x	180	7	22.19	0.3	Major congener 180 should not be terribly biased by 193.
	193	7	22.23	0.6	
	200	8	22.30	1.1	
	191	7	22.37	1.1	

Mix of Aroclor® 1242-1254-1262 used for resolution check.

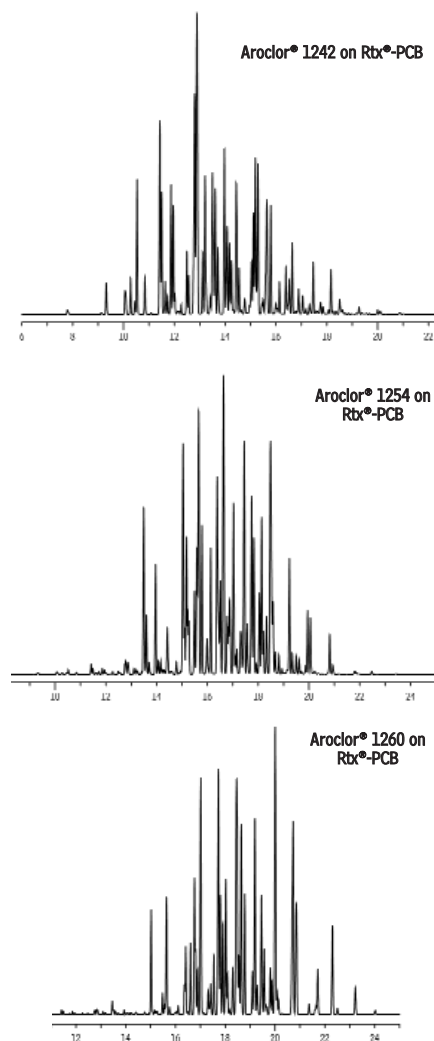
Relaxed resolution criteria based on visual inspection of closely eluting congeners.

Rtx®-PCB Columns (fused silica)

ID	df (μm)	temp. limits*	20-Meter	30-Meter	60-Meter
0.18mm	0.18	30°C to 320/340°C	41302		41304
0.25mm	0.25	30°C to 320/340°C		13223	13226
0.32mm	0.50	30°C to 320/340°C		13239	

Rtx®-PCB is the newest member of a family of new polymer phases that undergo rigorous quality assurance measures to ensure every column meets exacting standards and that performance is reproduced from column to column. Specified column parameters include film thickness, bleed (at 320°C), inertness, plates per meter, and retention time indices. These measures assure you of the highest quality columns available.

Figure 1 Excellent separation and peak shape for PCBs in three Aroclor® mixes, using an Rtx®-PCB column.



Column: Rtx®-PCB 30m, 0.25mm ID, 0.25μm (cat.# 13223)
 Sample: 200ng/mL Aroclor® 1242 (cat.# 32009); Aroclor® 1254 (cat.# 32011); Aroclor® 1260 (cat.# 32012)
 Inj.: 1.0μL splitless (hold 0.75 min.), 3.5mm ID single gooseneck inlet liner (cat.# 20962)
 Inj. temp.: 250°C
 Carrier gas: hydrogen, constant pressure
 Linear velocity: 71cm/sec. @ 110°C
 Oven temp.: 100°C (hold 1.0 min.) to 300°C @ 10°C/min. (hold 4 min.)
 Det.: ECD @ 310°C