

Elution order of all 209 PCB isomers on SGE HT8-PCB GC column

HT8-PCB

Column part number		054236	
Phase	HT8-PCB	Injection mode	Splitless
Column	60 m x 0.25 mm	Injection volume	1 µL
Instrument	Thermo Scientific Q Exactive GC Orbitrap GC-MS/MS	Injector temperature	280°C
Initial temperature	100°C, 1 min	Ionization mode	EI
Rate 1	20°C/min to 180°C, 0 min	Electron energy	70 eV
Rate 2	2°C/min to 260°C, 0 min	Trap current	50 µA
Rate 3	5°C/min to 300°C, 0 min	Ion source temperature	300°C
Rate 4	10°C/min to 320°C	Mass resolution	60,000 (FWHM at m/z 200)
Final temperature	320°C, 5 min	Mass range	m/z 150-550
Carrier gas	He, 1.0 mL/min	Mass tolerance	±10 ppm
Constant flow	On	Standard solution	209 polychlorinated biphenyl (PCB) isomers mixture standard each 10 ng/mL
Transfer line temperature	300°C		

This data has been generated in collaboration with Shimadzu Techno Research.

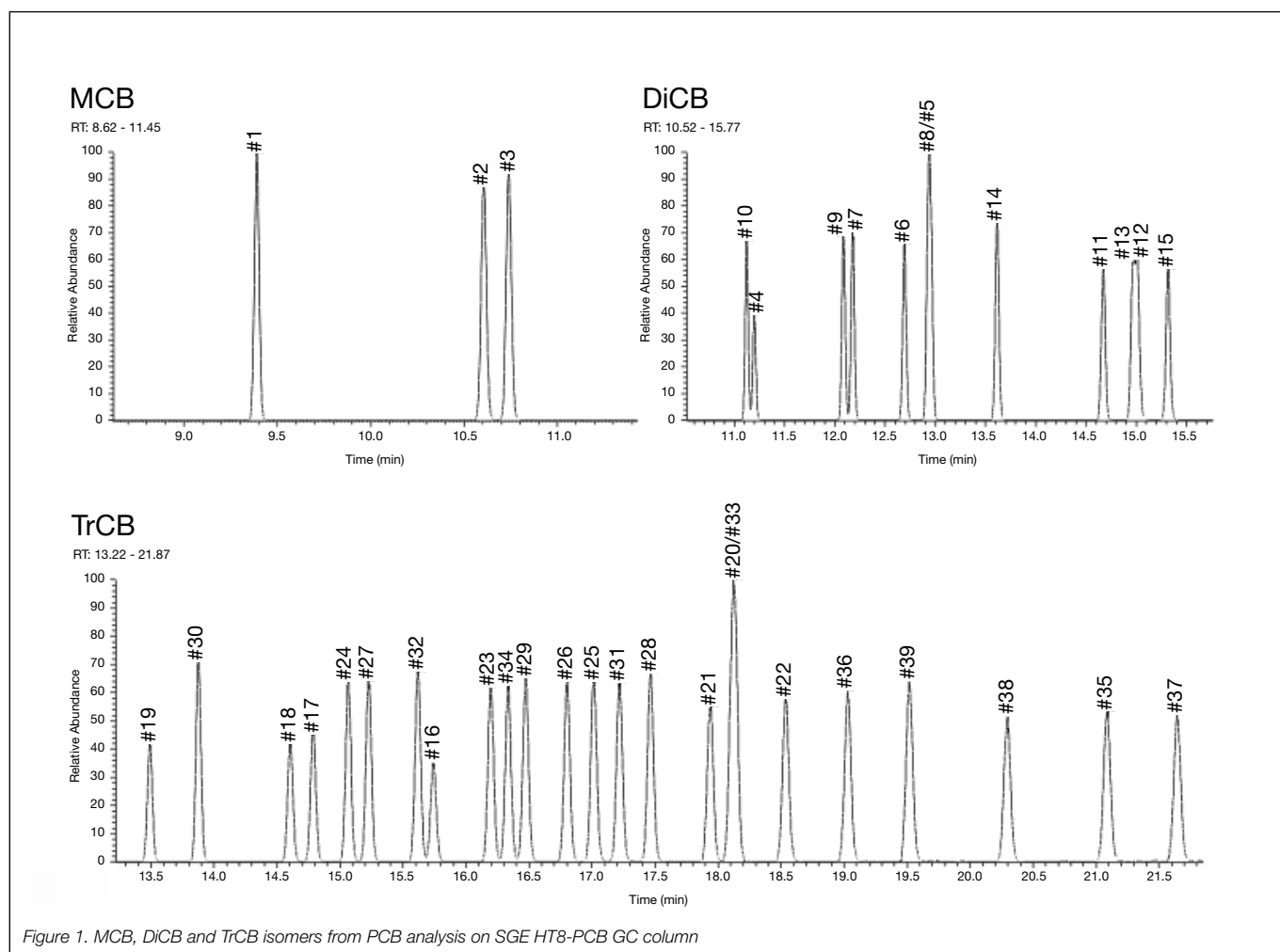
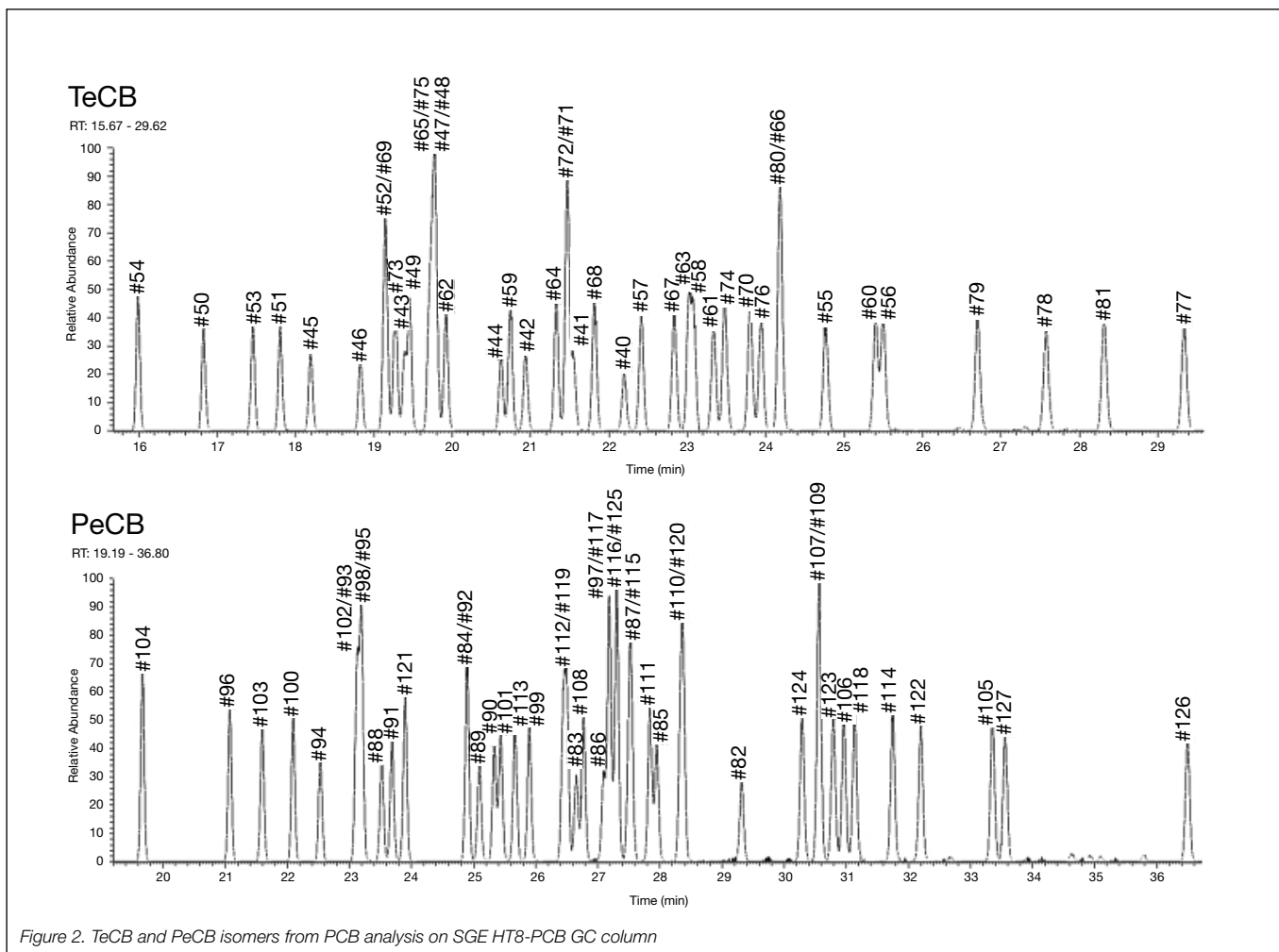


Figure 1. MCB, DiCB and TrCB isomers from PCB analysis on SGE HT8-PCB GC column

Elution order of all 209 PCB isomers on SGE HT8-PCB GC column continued



Elution order of all 209 PCB isomers on SGE HT8-PCB GC column continued

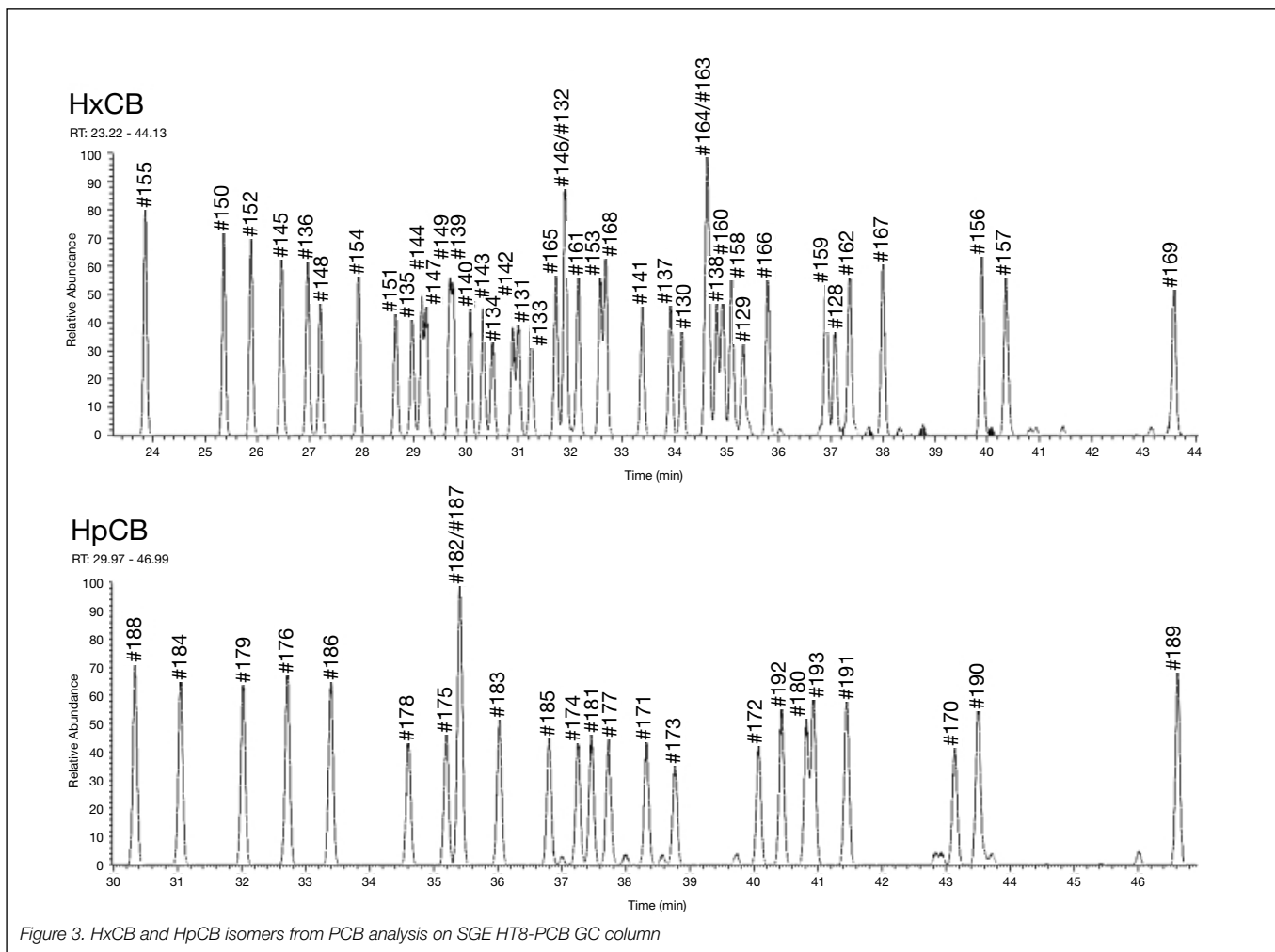


Figure 3. HxCB and HpCB isomers from PCB analysis on SGE HT8-PCB GC column

Elution order of all 209 PCB isomers on SGE HT8-PCB GC column continued

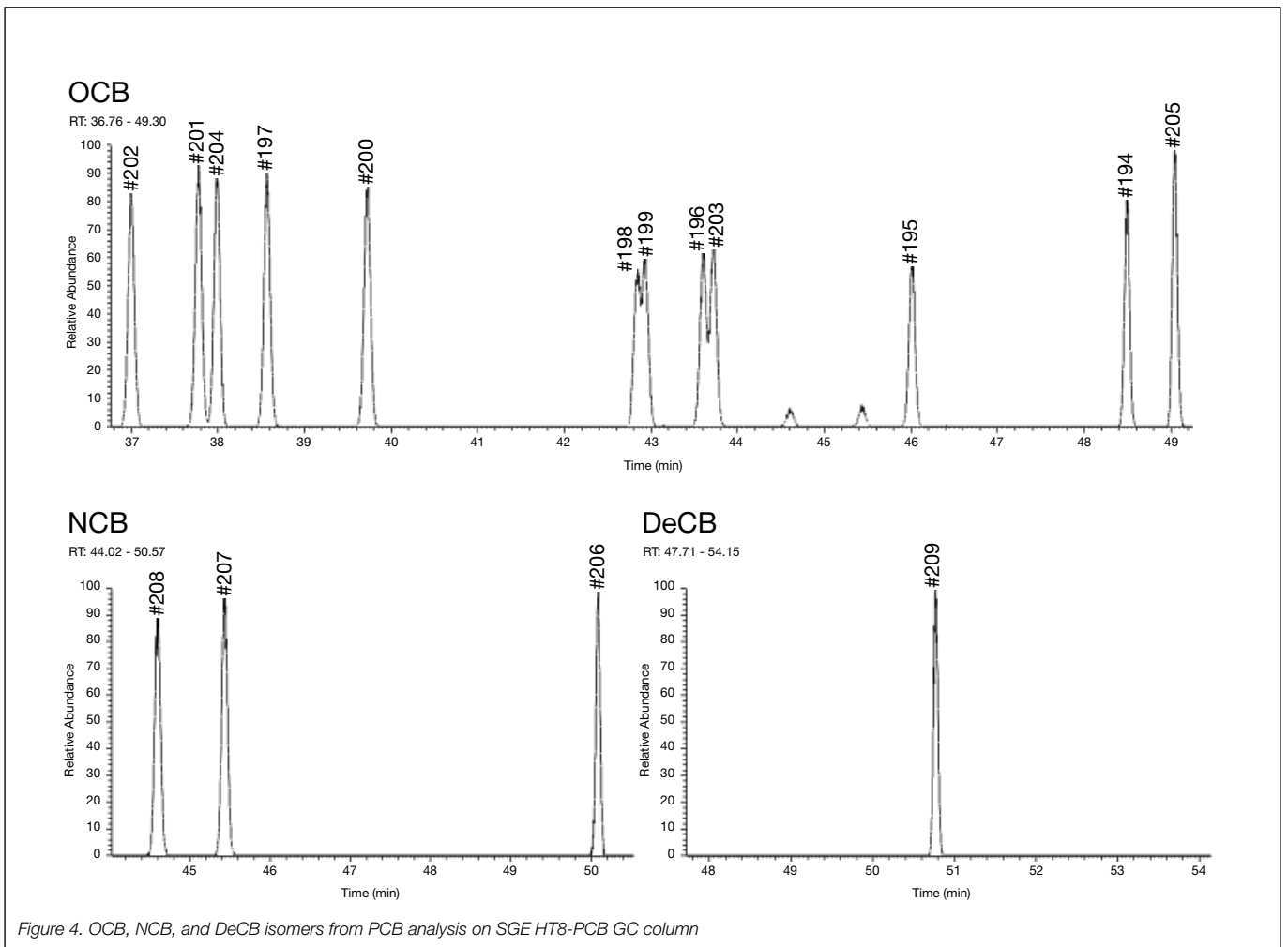


Figure 4. OCB, NCB, and DeCB isomers from PCB analysis on SGE HT8-PCB GC column

Elution order of all 209 PCB isomers on SGE HT8-PCB GC column continued

Components - Figure 1. MCB, DiCB and TrCB isomers

PCB	IUPAC #	Isomer	tR	RT index
MCB	#1	2-	9.390	1570
	#2	3-	10.605	1653
	#3	4-	10.739	1661
DiCB	#10	2,6-	11.120	1685
	#4	2,2'-	11.196	1690
	#9	2,5-	12.086	1737
	#7	2,4-	12.177	1741
	#6	2,3'-	12.694	1767
	#8	2,4'-	12.889	1777
	#5	2,3-	12.921	1779
	#14	3,5-	13.615	1811
	#11	3,3'-	14.673	1855
	#13	3,4'-	14.974	1868
	#12	3,4-	15.012	1869
	#15	4,4'-	15.313	1882
TrCB	#19	2,2',6-	13.490	1806
	#30	2,4,6-	13.879	1822
	#18	2,2',5-	14.605	1852
	#17	2,2',4-	14.786	1860
	#24	2,3,6-	15.069	1872
	#27	2,3',6-	15.223	1878
	#32	2,4',6-	15.617	1894
	#16	2,2',3-	15.737	1899
	#23	2,3,5-	16.194	1915
	#34	2,3',5'-	16.338	1921
	#29	2,4,5-	16.471	1925
	#26	2,3',5-	16.805	1937
	#25	2,3',4-	17.018	1944
	#31	2,4',5-	17.219	1952
	#28	2,4,4'-	17.460	1960
	#21	2,3,4-	17.942	1977
	#20	2,3,3'-	18.064	1981
	#33	2,3',4'-	18.092	1982
	#22	2,3,4'-	18.532	1998
	#36	3,3',5-	19.029	2014
	#39	3,4',5-	19.517	2029
	#38	3,4,5-	20.295	2053
	#35	3,3',4-	21.091	2078
	#37	3,4,4'-	21.641	2096

Components - Figure 2. TeCB and PeCB isomers

PCB	IUPAC #	Isomer	tR	RT index
TeCB	#54	2,2',6,6'-	15.991	1908
	#50	2,2',4,6-	16.830	1938
	#53	2,2',5,6'-	17.452	1960
	#51	2,2',4,6'-	17.809	1972
	#45	2,2',3,6-	18.191	1986
	#46	2,2',3,6'-	18.826	2007
	#52	2,2',5,5'-	19.092	2016
	#69	2,3',4,6-	19.100	2016
	#73	2,3',5',6-	19.275	2021
	#43	2,2',3,5-	19.338	2023

PCB	IUPAC #	Isomer	tR	RT index
TeCB continued	#49	2,2',4,5'-	19.411	2026
	#65	2,3,5,6-	19.661	2033
	#75	2,4,4',6-	19.700	2035
	#47	2,2',4,4'-	19.732	2036
	#48	2,2',4,5-	19.742	2036
	#62	2,3,4,6-	19.918	2042
	#44	2,2',3,5'-	20.621	2064
	#59	2,3,3',6-	20.747	2068
	#42	2,2',3,4'-	20.935	2074
	#64	2,3,4',6-	21.324	2086
	#72	2,3',5,5'-	21.414	2089
	#71	2,3',4',6-	21.421	2089
	#41	2,2',3,4-	21.494	2091
	#68	2,3',4,5'-	21.812	2101
	#40	2,2',3,3'-	22.193	2112
	#57	2,3,3',5-	22.414	2118
	#67	2,3',4,5-	22.826	2130
	#63	2,3,4',5-	22.971	2135
	#58	2,3,3',5'-	23.036	2136
	#61	2,3,4,5-	23.331	2145
	#74	2,4,4',5-	23.479	2149
	#70	2,3',4',5-	23.795	2158
	#76	2,3',4',5'-	23.946	2163
	#80	3,3',5,5'-	24.130	2168
	#66	2,3',4,4'-	24.136	2168
	#55	2,3,3',4-	24.762	2186
	#60	2,3,4,4'-	25.405	2205
	#56	2,3,3',4'-	25.490	2207
	#79	3,3',4,5'-	26.696	2240
	#78	3,3',4,5-	27.575	2265
	#81	3,4,4',5-	28.310	2285
	#77	3,3',4,4'-	29.335	2313
	PeCB	#104	2,2',4,6,6'-	19.665
#96		2,2',3,6,6'-	21.081	2078
#103		2,2',4,5',6-	21.593	2094
#100		2,2',4,4',6-	22.100	2109
#94		2,2',3,5,6'-	22.530	2122
#102		2,2',4,5,6'-	23.048	2137
#93		2,2',3,5,6-	23.088	2138
#98		2,2',3,4',6'-	23.137	2139
#95		2,2',3,5',6-	23.152	2140
#88		2,2',3,4,6-	23.519	2150
#91		2,2',3,4',6-	23.688	2155
#121		2,3',4,5',6-	23.896	2161
#84		2,2',3,3',6-	24.841	2189
#92		2,2',3,5,5'-	24.854	2189
#89		2,2',3,4,6'-	25.089	2196
#90		2,2',3,4',5-	25.335	2203
#101		2,2',4,5,5'-	25.435	2206
#113		2,3,3',5',6-	25.669	2212
#99		2,2',4,4',5-	25.897	2218
#112		2,3,3',5,6-	26.395	2232
#119		2,3',4,4',6-	26.453	2234
#83		2,2',3,3',5-	26.653	2239
#108		2,3,3',4,6-	26.771	2242
#86		2,2',3,4,5-	27.045	2250
#97	2,2',3,4',5'-	27.128	2252	
#117	2,3,4',5,6-	27.136	2252	

Elution order of all 209 PCB isomers on SGE HT8-PCB GC column continued

PCB	IUPAC #	Isomer	tR	RT index
PeCB continued	#116	2,3,4,5,6-	27.251	2256
	#125	2,3',4',5',6-	27.255	2256
	#87	2,2',3,4,5'-	27.454	2261
	#115	2,3,4,4',6-	27.480	2262
	#111	2,3,3',5,5'-	27.833	2272
	#85	2,2',3,4,4'-	27.944	2275
	#110	2,3,3',4',6-	28.286	2284
	#120	2,3',4,5,5'-	28.333	2285
	#82	2,2',3,3',4-	29.315	2312
	#124	2,3',4',5,5'-	30.287	2339
	#107	2,3,3',4,5'-	30.513	2345
	#109	2,3,3',4',5-	30.525	2345
	#123	2,3',4,4',5'-	30.797	2353
	#106	2,3,3',4,5-	30.967	2357
	#118	2,3',4,4',5-	31.136	2362
	#114	2,3,4,4',5-	31.748	2378
	#122	2,3,3',4',5'-	32.198	2391
	#105	2,3,3',4,4'-	33.348	2422
	#127	3,3',4,5,5'-	33.564	2427
	#126	3,3',4,4',5-	36.497	2507

PCB	IUPAC #	Isomer	tR	RT index	
HCB continued	#160	2,3,3',4,5,6-	34.920	2464	
	#158	2,3,3',4,4',6-	35.091	2469	
	#129	2,2',3,3',4,5-	35.319	2475	
	#166	2,3,4,4',5,6-	35.787	2487	
	#159	2,3,3',4,5,5'-	36.912	2518	
	#128	2,2',3,3',4,4'-	37.080	2523	
	#162	2,3,3',4',5,5'-	37.359	2530	
	#167	2,3',4,4',5,5'-	38.002	2548	
	#156	2,3,3',4,4',5-	39.898	2599	
	#157	2,3,3',4,4',5'-	40.357	2612	
	#169	3,3',4,4',5,5'-	43.595	2702	
	HpCB	#188	2,2',3,4',5,6,6'-	30.332	2340
		#184	2,2',3,4,4',6,6'-	31.043	2359
		#179	2,2',3,3',5,6,6'-	32.020	2386
		#176	2,2',3,3',4,6,6'-	32.715	2405
		#186	2,2',3,4,5,6,6'-	33.398	2423
		#178	2,2',3,3',5,5',6-	34.609	2456
#175		2,2',3,3',4,5',6-	35.199	2472	
#182		2,2',3,4,4',5,6'-	35.354	2476	
#187		2,2',3,4',5,5',6-	35.365	2476	
#183		2,2',3,4,4',5',6-	36.025	2494	
#185		2,2',3,4,5,5',6-	36.794	2515	
#174		2,2',3,3',4,5,6'-	37.251	2527	
#181		2,2',3,4,4',5,6-	37.457	2533	
#177		2,2',3,3',4,5',6'-	37.728	2540	
#171		2,2',3,3',4,4',6-	38.318	2556	
#173		2,2',3,3',4,5,6-	38.765	2568	
#172		2,2',3,3',4,5,5'-	40.078	2604	
#192		2,3,3',4,5,5',6-	40.430	2614	
#180		2,2',3,4,4',5,5'-	40.822	2625	
#193		2,3,3',4',5,5',6-	40.932	2628	
#191		2,3,3',4,4',5',6-	41.450	2642	
#170		2,2',3,3',4,4',5-	43.140	2689	
#190	2,3,3',4,4',5,6-	43.497	2699		
#189	2,3,3',4,4',5,5'-	46.616	2792		

Components - Figure 3. HxCB and HpCB isomers

PCB	IUPAC #	Isomer	tR	RT index
HxCB	#155	2,2',4,4',6,6'-	23.843	2160
	#150	2,2',3,4',6,6'-	25.357	2203
	#152	2,2',3,5,6,6'-	25.875	2218
	#145	2,2',3,4,6,6'-	26.460	2234
	#136	2,2',3,3',6,6'-	26.964	2248
	#148	2,2',3,4',5,6'-	27.201	2254
	#154	2,2',4,4',5,6'-	27.931	2274
	#151	2,2',3,5,5',6-	28.654	2294
	#135	2,2',3,3',5,6'-	28.966	2303
	#144	2,2',3,4,5',6-	29.101	2307
	#147	2,2',3,4',5,6-	29.185	2309
	#149	2,2',3,4',5',6-	29.637	2321
	#139	2,2',3,4,4',6-	29.703	2323
	#140	2,2',3,4,4',6'-	30.081	2333
	#143	2,2',3,4,5,6'-	30.329	2340
	#134	2,2',3,3',5,6-	30.508	2345
	#142	2,2',3,4,5,6-	30.892	2355
	#131	2,2',3,3',4,6-	31.000	2358
	#133	2,2',3,3',5,5'-	31.249	2365
	#165	2,3,3',5,5',6-	31.723	2378
	#146	2,2',3,4',5,5'-	31.856	2381
	#132	2,2',3,3',4,6'-	31.859	2381
	#161	2,3,3',4,5',6-	32.155	2389
	#153	2,2',4,4',5,5'-	32.572	2401
	#168	2,3',4,4',5',6-	32.680	2404
	#141	2,2',3,4,5,5'-	33.388	2423
	#137	2,2',3,4,4',5-	33.926	2437
	#130	2,2',3,3',4,5'-	34.144	2443
	#164	2,3,3',4',5',6-	34.551	2454
	#163	2,3,3',4',5,6-	34.594	2455
	#138	2,2',3,4,4',5'-	34.810	2461

Components - Figure 4. OCB, NCB and DeCB isomers

PCB	IUPAC #	Isomer	tR	RT index	
OCB	#202	2,2',3,3',5,5',6,6'-	36.995	2520	
	#201	2,2',3,3',4,5',6,6'-	37.776	2541	
	#204	2,2',3,4,4',5,6,6'-	37.992	2547	
	#197	2,2',3,3',4,4',6,6'-	38.569	2563	
	#200	2,2',3,3',4,5,6,6'-	39.729	2594	
	#198	2,2',3,3',4,5,5',6-	42.849	2681	
	#199	2,2',3,3',4,5,5',6'-	42.929	2683	
	#196	2,2',3,3',4,4',5,6'-	43.603	2702	
	#203	2,2',3,4,4',5,5',6-	43.721	2706	
	#195	2,2',3,3',4,4',5,6-	46.011	2774	
	#194	2,2',3,3',4,4',5,5'-	48.494	2860	
	#205	2,3,3',4,4',5,5',6-	49.044	2881	
	NCB	#208	2,2',3,3',4,5,5',6,6'-	44.600	2732
		#207	2,2',3,3',4,4',5,6,6'-	45.436	2757
		#206	2,2',3,3',4,4',5,5',6-	50.088	2924
DeCB	#209	2,2',3,3',4,4',5,5',6,6'-	50.771	2954	

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