

GAS CHROMATOGRAPHIC DETERMINATION OF CHLORINATED
BIPHENYL ISOMERS IN AROCLOR PRODUCTS

PURPOSE OF ANALYSIS

Improved method for determining the chlorinated biphenyl isomer distribution in fractions from Aroclor distillation studies.

CHROMATOGRAPHIC CONDITIONS

Instrument: Varian Aerograph Series 1200

Type Detector: Flame Ionization

Column: 100' X 0.02" I.D. Poly I-110 Support Coated Open Tubular
(SCOT)

Column Temperature: 220°C

Flow Rates

Detector Block Temperature: 300°C

Helium: 6 ml/min.

Injection Port Temperature: 300°C

Auxiliary Gas: 35 ml/min.

Sample Volume Injected: 0.001 ml
Split 30/1

Hydrogen: 40 ml/min.

Air: 350 ml/min.

RETENTION TIMES (UNCORRECTED) OF COMPONENTS SEPARATED (CHROMATOGRAM
ATTACHED)

Component No.	Identity	Retention Time (Minutes)
1	Biphenyl	6.2
2	o-Chlorobiphenyl	7.0
3	2,2'-Dichlorobiphenyl	8.5
4	m-Chlorobiphenyl	8.9
5	p-Chlorobiphenyl	9.2
6	2,5-Dichlorobiphenyl	10.0
7	2,4- and 2,6-Dichlorobiphenyl	10.2
8	2,3'-Dichlorobiphenyl	10.5
9	2,3-Dichlorobiphenyl	10.8
10	2,4'-Dichlorobiphenyl	11.1
11	2,5,2'-Trichlorobiphenyl	12.4
12	Unknown Trichlorobiphenyl	12.8
13	Unknown Trichlorobiphenyl	13.1
14	2,3,2'-Trichlorobiphenyl	13.6
15	Unknown Trichlorobiphenyl	14.0
16	3,3'-Dichlorobiphenyl	14.6
17	3,4-Dichlorobiphenyl	15.1
18	3,4'-Dichlorobiphenyl	15.4
19	Unknown Tetrachlorobiphenyl	15.7
20	4,4'-Dichlorobiphenyl	16.2
21	Unknown Trichlorobiphenyl	16.5

<u>Component No.</u>	<u>Identity</u>	<u>Retention Time (Minutes)</u>
22	Unknown Trichlorobiphenyl	16.5
23	2,5,4'-Trichlorobiphenyl	16.8
24	2,4,4'-Trichlorobiphenyl	18.2
25	3,4,2'-Trichlorobiphenyl	18.5
26	2,5,2',5'-Tetrachlorobiphenyl	19.4
27	2,3,4-Trichlorobiphenyl	19.7
28	Unknown Tetrachlorobiphenyl	20.1
29	Unknown Tetrachlorobiphenyl	21.0
30	Unknown Tetrachlorobiphenyl	21.6
31	Unknown Tetrachlorobiphenyl	22.0
32	Unknown Tetrachlorobiphenyl	22.5
33	Unknown Tetrachlorobiphenyl	23.3
34	Unknown Tetrachlorobiphenyl	24.2
35	Unknown Pentachlorobiphenyl	25.8
36	Unknown Pentachlorobiphenyl	27.5
37	Unknown Tetrachlorobiphenyl	27.7
38	Unknown Pentachlorobiphenyl	28.5
39	Unknown Tetrachlorobiphenyl	28.8
40	3,4,4'-Trichlorobiphenyl	29.8
41	Unknown Tetrachlorobiphenyl	30.8
42	Unknown Tetrachlorobiphenyl	31.2
43	Unknown Tetrachlorobiphenyl	32.2
44	2,4,5,2',5'-Pentachlorobiphenyl	32.8
45	Unknown Pentachlorobiphenyl	34.1
46	Unknown Tetrachlorobiphenyl	34.7
47	Unknown Tetrachlorobiphenyl	35.5
48	Unknown Pentachlorobiphenyl	36.2
49	Unknown Pentachlorobiphenyl	37.3
50	Unknown Pentachlorobiphenyl	38.9
51	Unknown Pentachlorobiphenyl	39.5
52	Unknown Pentachlorobiphenyl	41.0

CALCULATION TECHNIQUE

Normalization With Area Correction Factors.

PRECISION

No determination of precision was made. The variability of a single GC analysis at the 95% confidence limits is usually ± 0.5 to 1% relative.

db

Monsanto Industrial Chemicals Co.
Applied Sciences
St. Louis, Mo.

7/74 - G. M. Gasser, E. M. Emery

MONS 021719

