Monsanto

FROM (NAME & LOCATION) E. M. Emery/G. M. Gasser - Technology Dept. - S. 2nd St. - St. Louis

DATE : September 27, 1971

SUBJECT : BIPHENYL IMPURITY ANALYSES

REFERENCE :

TO : Edward Stewart
W. G. Krummrich Plant

cc: R. H. Munch - Res. 2
R. E. Keller - Res. 1
R. W. Blowers - WGK
J. R. Savage - GO
O. DeGarmo - Res. 1
J. F. Quinn - Res. 1
W. R. Richard - GO
J. P. Mieure - Res. 2
M. W. Dietrich - Res. 2
E. S. Tucker - Res. 2

We have carried out trace impurity analyses by capillary column gas chromatography on the fifteen biphenyl samples made at Anniston and from which WGK Aroclor was produced. The results are given in the accompanying table. It is hoped that these will correlate with the thermal chemical chloride test on the resulting finished Aroclor products.

We evaluated several GC columns for this analysis and found that a 100 foot Apiezon L S.C.O.T. (support-coated open tubular) column gave the best resolution and sensitivity. It showed the largest number of resolved impurity peaks in biphenyl. The peak identifications were made only from retention times of known compounds. If any certain components including the unknown ones correlate with the TCC test, then further work via tandem gas chromatography/mass spectroscopy can be done to confirm the identity of the impurities of interest. Please contact Martin Dietrich if you want such GC/MS identification work done.

E. M. Emery

G. M. Gasser

db
Encl.

DSW 296786

Biphenyl Impurity Analyses

Component (in order of elution)	GATX-94530 AM-777 12-11-70	GATX-94530 AA-607 1-6-71	GATX-57364 AM 803 12-30-70	GK-94519 - 5-11-71	GK 94514 - 6-20-71	GK 94513 6-16-71	NATX 21249 - 6-3-71	NATX 23176 AA-655 2-28-72	GATX-93148 AA-626 1-26-71	NATX-23176 AM-798 12-29-70	GATX 93137 AA-640 2-11-71	NATX 21258 AA-613 1-13-71	NATX 21262 - 5-30-71	GATX-94510 AA-608 1-[illegible]-71	GATX-93194 AA-616 1-13-71
	Concentration in PPM														
Naphthalene	2.2	4.2	1.9	1.7	2.2	2.2	2.9	3.0	4.4	2.7	5.8	3.3	1.6	2.3	3.9
	0.2	0.1	0.2	0.2	0.1	0.2	0.3	0.3	0.4	0.1	0.2	0.2	0.2	0.2	0.3
	0.2	0.2	0.2	0.5	0.2	0.3	0.3	0.3	0.4	0.1	0.2	0.3	0.2	0.2	0.3
2-Me Naph.	2.2	2.2	1.7	1.6	1.7	1.9	2.1	1.8	3.3	1.8	3.2	3.0	1.5	2.6	2.8
1-Me Naph.	4.2	4.2	2.9	3.2	2.7	3.0	3.4	3.8	6.2	3.9	7.6	4.1	2.3	4.6	6.4
2-Me Biphenyl	4.2	5.4	4.0	5.0	3.5	4.1	4.5	7.8	11.9	5.6	7.1	3.2	4.4	17.0	23.1
Biphenyl	DSW 296787														
	32.8	30.0	42.0	46.1	54.6	41.0	34.2	71.1	79.8	52.3	72.9	42.5	46.3	42.0	41.3
	0.8	0.5	0.4	0.8	0.3	0.5	0.5	0.9	0.6	0.7	0.7	0.6	0.4	1.0	0.6
	1.6	1.3	1.3	0.8	0.3	0.7	0.5	1.8	1.7	1.3	1.3	1.3	0.8	2.0	1.3
	0.8	0.5	0.8	0.8	0.3	0.5	0.5	0.9	0.6	0.7	0.7	0.6	0.4	0.5	0.6
3-Me Biphenyl	126.5	216.7	208.3	135.3	145.7	157.9	119.5	164.1	148.2	255.7	231.1	140.6	121.3	255.9	181.6
4-Me Biphenyl	53.3	85.9	82.2	38.6	44.4	49.4	37.8	48.5	51.0	98.0	36.6	42.8	35.6	95.4	60.1
	6.2	10.3	6.1	2.7	3.6	4.4	2.4	4.8	4.2	11.0	3.0	3.3	2.2	8.2	7.1
Total	351.7	381.3	352.0	237.3	256.6	266.1	208.4	307.1	312.7	433.9	370.4	245.8	217.2	431.9	329.5

STLCOPCB4066700