Monsanto

... C. Raton - B2SC

... July 2, 1974

... MONOCHLOROBIPHENYL

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Dow/Monochlorobiphenyl pf

TO T. L. Gossage
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The status of the monochlorobiphenyl project is as follows:

1. Contract

Wayne Withers is redrafting the contract in better legal language and is proposing this contract stand on its own rather than a supplement to the Monsanto-Dow Master Agreement. This draft should be ready July 2.

2. Conversion Cost

WGK TSD Dept. have given Jim Savage revised monochlorobiphenyl costs based on isomerization of the residue and its re-use via hydrodechlorination. Isomerization is the most attractive route:

Total capital @ 8M lbs./year = $200M,

(versus original estimate of $170M)

Conversion cost @ 8M lbs./year = 6.43 cents/lb.

(versus original estimate of 5.8¢/lb.)

To maintain our original proposal of 64.8% gross profit (excluding F&B from Anniston on biphenyl) this would mean a revised price to Dow of 18.25 cents/lb. FOB WGK versus our original quote of 16.5¢/lb. FOB WGK. To absorb the increased conversion charge would cost us $50M per year at 8M lbs. and lower the gross profit to 61%. I would recommend we try for 18.25¢/lb. FOB WGK but be given a floor of 17.25 - 17.75¢/lb. for any negotiations.

Hydrochlorination would be an extremely costly route. At 8M lbs./year, the capital required would jump from $170M to $1100M and the conversion cost would escalate from 5.8¢/lb. to 11.5¢/lb.

3. Monochlorobiphenyl Residues

(a) 8M lbs./year

Convert residue in Aroclor 1242 for use in Inerteen 54201CM/100-42 - balance probably okay.

Some differences should be noted:

(i) Different IR/GLC scans

(ii) Lower D_K:

4.6 - 4.7 versus current spec. of 4.75 - 4.95

In transformers, this could be a plus.

(iii) Refractive index: 1.628 versus spec. of 1.624 - 1.626

(iv) Pentachloro/hexachlorobiphenyl might be lower - a definite plus.

This needs to be checked out by 0.4% higher boiling homolog test as well as GLC. This will be done and results should be available in about 2 weeks.

(b) 16M lbs./year

Additional residue would have to be converted to Aroclor 1016 and hence 25-33% of Aroclor 1016 would be of this quality if current sales levels are kept. The changes in Aroclor 1016 would be essentially the same as for Aroclor 1242 except that a lower D_K would be a decided disadvantage. Dario Cova feels this can be overcome by chlorinating the residue a little higher and fractionating more without the isomerization step. This would keep the D_K up and be okay on conversion economics but would increase high-boiler residues (to Aroclor 1254). When we plant trial monochlorobiphenyl for Dow in August/September we should get material for Dario to check out Aroclor 1016 production.

In both cases we will need an explanation for customers. I would suggest the following:

"Production of dielectric fluids needs to take into account two factors (a) balance of our product mix with regard to isomers required and (b) the need to minimize residues which pose pollution/effluent problems. Accordingly we need to adjust chlorination procedures slightly. In the case of Inerteen 100-42/54201CM two advantages (if proven) will be seen: lower D_K and a slightly lower penta/hexa-level. In the case of Aroclor 1016 (if proven) a slightly lower penta-/hexa-level is obtained with no loss in D_K. We expect no adverse performance as a result of these changes. Samples will be available in September for your evaluation and we wish to implement this production change in January 1975."

4. Monochlorobiphenyl Sales Price

In November 1973 we quoted monochlorobiphenyl to Dow at $0.245/lb. FOB WGK based on benzene cost at Anniston as of September 1973 and chlorine at OPD Chemical Grade price. The price of monochlorobiphenyl would increase $0.00185/lb. for every $0.01/gallon in benzene price and $0.0005/lb. with every increase of $2.00 per ton of chlorine. Recalculations are:

(a) Actual COGS of monochlorobiphenyl as of July 1974

R.M.:	$0.2322/lb.
Conversion:	0.0643
	$0.2965/lb.

COGS estimate as of 10/19/73:

Benzene	$0.37/gal.	$0.47/gal.
Chlorine	$80/ton	$80/ton
COGS	$0.1472/lb.	$0.1628/lb.

Price quote to Dow of $0.245/lb. FOB was based on benzene @ $0.37/gallon and chlorine $80/ton giving a gross profit of 40%. On this basis a new price to Dow would be $0.494/lb. FOB.

(b) Proposed Escalators

	Benzene	Chlorine	Total
Cost at Sept. 1973	$0.37/gal.	$80/ton	
Cost at July 1974	$1.25/gal.	$100/ton	
Escalation	$0.88/gal.	$20/ton	
Escalation factor	$0.00185/lb. per $0.01/gal.	$0.0005/lb. per $2/ton	
Escalation to Dow	$0.1628/lb.	$0.005/lb.	$0.1678/lb.
Price at 11/1/73	$0.245/lb.	$0.245	$0.245
Escalated price	$0.4078/lb.	$0.2455	$0.4128/lb.

On this basis a price of $0.4128/lb. FOB would give a gross profit of 28.2%. Adjusting for escalation in conversion cost, we could quote $0.43/lb. FOB for a gross profit of 31%. (Part of the deviation from $0.495/lb. may be that the latest costs show different usage factors for benzene and chlorine.)

We need to agree on a monochlorobiphenyl ~~cost~~ price somewhere between $0.43 - 0.495/lb. FOB.

In the next few days I'd like to get Business Group approval to submit a contract proposal to Dow.

C. Paton

/pep