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St. Louis - General Office

May 17, 1968

LOW-TEMPERATURE AROCLOR

Yours to PGP 3/1/68
Yours to P.J.A. Marsh 4/19/68

Colin R. Coleman - RUNCORN

Dear Colin:

*H. S. Bergen - HIBERG
*J. G. Bryant
D. S. Cameron - BRUSSELS
P.J.A. Marsh - LONDON
*R. H. Munch - SECOND STREET
[redacted]
J. D. Sullivan - JSULL
D. Wood - BRUSSELS

To comment on your memo of March 1, 1968 to me, and also yours of April 19 to P.J.A. Marsh, it is apropos to start with your conclusion given in your April 19 memo to Peter Marsh. May I quote you as follows: "In conclusion, I point out that MCL is now the only one of the three major European producers of askarels who does not offer a Pyralene 1500 type product!"

By way of review, the following lists the competitive products:

1. PRODELEC (France)

In 1965 Prodelec marketed Pyralene 1500 with a pour point of -24 C. and permittivity slightly higher than Aroclor 1242. A 10 percent premium over Aroclor 1242 was charged believing that this was justified by the higher permittivity offered. At the time we pointed out that this feature would be economically unsound in our country. While we felt that it would have more merit in the European market, we wonder whether, in the long run, the premium would be fully justified. Accordingly, we were interested in your comment that you believe this premium has been reduced. In any event Pyralene 1500, at a significant premium, does not appear to have disrupted the MCL market as was originally feared by MCL marketing people.

Recently, Prodelec introduced Pyralene 1500-S with pour point of -26 C. and permittivity the same as for Aroclor 1242. Apparently the angle regards higher permittivity interest has been abandoned. Indeed, subsequent interest in lower pour point Aroclor 1242 for both capacitors and transformers make this -26 C. pour point markedly interesting versus the significantly higher pour point of Aroclor 1242 at -19 C. We are impressed by your belief that Prodelec are now supplying Siemen's low temperature capacitor Aroclor

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requirement with Pyralene 1500-S. We recall Siemen's requirement to switch power capacitors at -55 C. and we are aware of the consensus that Aroclor 1242 is suitable for switching only to -40 C.

Economics are extremely important, and we would say that if Pyralene 1500-S is available at the same price as Aroclor 1242, Prodelec can supply not only Siemen's requirements, but everyone else's requirements.

2. BAYER (Germany)

According to your writings, Bayer has now countered Prodelec's new products with their recently announced Clophen LK 4018. You report that this product also has a pour point of -26 C, and the same "high" permittivity of Pyralene 1500, that is to say, the dielectric constant is higher than the value for Prodelec's new Pyralene 1500-S and Aroclor 1242. Does Bayer charge a premium for their new Clophen LK 4018?

3. ORGANIC RESEARCH (St. Louis)

Probably you have received our 1965 Research analysis of Pyralene 1500. We recall that the material differs markedly in composition from regular Aroclor 1242. Total chlorine is lower at 39 to 40 percent versus 42 percent for Aroclor 1242. The new material is very high in all dichlorobiphenyl isomers except the undesirable 4, 4' dichlorobiphenyl, which latter is present at a level of not over 1.3 percent. We have thoroughly analyzed and compared the isomeric content of Pyralene 1500 versus Aroclor 1242, and are well versed with Prodelec's patent which discloses the manufacturing process. In general, the compositions may be compared as follows:

	Pyralene 1500	Aroclor 1242
Dichlor	63%	31%
Trichlor	15%	53%
Tetra	22%	16%
	100%	100%
Flash	345° F.	350° F.
Fire	570° F. But these occur below the boiling point	None to boiling, i.e. 615° F.

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Subsequently, our Research people studied a variety of approaches and combinations thereof, including crystalization, efficient fractionation with a 40 plate column, isomerization techniques, etc., that can be employed in various ways to alter the complex isomer mix to yield the Pyralene 1500 type material.

This becomes an engineering problem and requires thorough study because any of the above steps alone or in combination cost money to perform. Certainly, it costs Prodelec and Bayer to do these things. Therefore, we ask for detailed selling prices of the new Bayer and Prodelec materials as compared against the normal sale price of Aroclor 1242 in your various market areas. We need to know this to judge how many cents per pound we could afford to spend on making alteration of Aroclor 1242.

Additionally, please send us at least a pound (more if possible) of Pyralene 1500-S and Clophen LK 4018 so that we can run a complete isomer analysis needed to assume the process for manufacture.

As comparing pour points of, say -24 C. versus -26 C. is a nebulous basis for comparison, we seek to establish the more realistic cracking temperatures of all these materials.

As another pertinent consideration, especially in light of the very high dichlorobiphenyl content of Pyralene 1500, we seek to probe whether indeed such material will classify as an askarel. For example, we know that the Underwriters' do not approve Aroclor 1232 as an askarel.

Availability of Aroclor 1242-type material, possessing essentially the same properties and economic factors except that the pour point is -26 C or lower, would not merely be the "market specialty" of interest for -55 C. low temperature capacitors being considered in Europe, but it would be broadly received with enthusiasm and rejoicing at both the capacitor and transformer market places world-wide.

Indeed, a -26 C. pour point, and certainly a -30 C. pour point Aroclor 1242 type material is the fundamental need to attain broader acceptance of 100 percent Aroclor for transformers, to get away more fully from the nonsense of using chlorobenzene diluents.

The crux to all of this lies in the ability to provide these properties without incurring cost increase that would preclude using the lower pour point dielectric. In this regard, we suspect that the higher selling prices charged for Aroclor1242 in various areas of your market may be giving Prodelec and Bayer a greater economic spread in which to produce the new materials than allowed by our margins in the States.

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Our Research people possess the technical capacility, and as you pointed out, we do have the funds to explore these competitive products. We look forward to your advice about the economics involved at the market place, and to receiving samples for analysis. This will enable Research to make judgments about which of the various processing steps can be employed to produce material within the allowable economic framework.

Two years or so ago, when I was in England and we reviewed your Aroclor 1242 markets, the thing that disturbed me was the comparative high prices charged capacitor makers for Aroclor 1242. We suggested the importance of getting your costs down to support lower sale prices for Aroclor 1242. Otherwise we foresaw strong possibility of your competitors (Bayer and Prodelec) having economic room to introduce modifications of Aroclor 1242, resulting in the harassment you have been encountering.

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All the foregoing is merely general background, as is also Mr. Cameron's letter to Howard Bergen of 5/13/68 which arrived today. This letter lists nine MCL target accounts with five million pounds Aroclor potential, and voices concern of competitive activity from Bayer and Prodelec on the Pyralene 1500 and also the epoxide types.

Now it is time to stop generalities and nail down that MCL must clarify for us exactly what approaches you visualize as the most effective counter measures in your markets:

1. What has been done, or can be done, to lower your Aroclor 1242 production cost to allow lower market sale price?

2. Estimate it will cost three cents to five cents per pound to modify Aroclor 1242 along the lines of Pyralene 1500-S, i.e., lower pour point from -19 C. to -26 C. What is the market price of these products? How much will your customers pay for 7 C. lower pour point? We need accurate guidance on this.

3. Monsanto could reoffer Aroclor 1242 high dielectric constant (HDK-1), but this costs even more.

4. Arising from MCL market area, our Research has developed methods to improve quality of Aroclor 1242. Can MCL adopt these measures and use them at the market place to thwart competition?

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5. About Prodelec's Superad. Dr. Richard tells me that Research has not received a sample. We need to study its quality.

   We believe we can offer an improved quality of epoxides versus what is now available from the manufacturers of epoxides.

   November 1967 we advised MCL that Unox 206 costs us 90 cents per pound delivered St. Louis. We asked, and have not heard, what MCL estimates should be the pricing parameters of, say a 50-50 Aroclor 1242/Unox 206 concentrate?

   Is Superad this above blend, or does Prodelec offer some other epoxide as earlier believed by MCL?

6. Mr. Cameron asks, "Shouldn't we negotiate with G.E. in advance of Prodelec, not after them?" I assure we negotiated with G.E. prior to Prodelec. In fact, we told G.E. about Prodelec's activity. Now Prodelec is negotiating. Pyranol II is G.E. patented property. G. E. must advise Monsanto and Prodelec what the charge is. We advised MCL that Monsanto will get the exact same offer as made to Prodelec.

7. We don't know, and have to ask MCL, what are your customers willing to pay for the use of epoxide?

8. MCL says Prodelec offer epoxide to your customers. What does Prodelec charge your customers to use the epoxide? We must know this to negotiate comparable economics from G.E. Or, if Prodelec epoxide market activity is outside of G.E. patents, please indicate. However, I thought we found Unox 206 in Prodelec samples.

9. Will hear in a few days what G.E.'s proposal is and will forward to MCL. Will want your customer reactions, so we can discuss with G. E. in the near future.

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Colin, please excuse that some of this has spilled outside your normal work areas. It is best to keep it all together, as we seek uniform response from the various MCL areas regards answer to our specific questions. We stand ready to help, but MCL must nail down the approaches you want taken to best serve your markets.

Best regards.

P. G. Benignus

/ecd

*Enclosures

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