* St. Louis - General Office

October 30, 1967
PIRELLI GENERAL LIMITED
EASTLEIGH, SOUTH HAMPTON
FIRE-RESISTANT, LIQUID-FILLED
CAPACITORS

P. J. A. Marsh - LONDON

H. S. Bergen - HBERG
*G. R. Buchanan
C. R. Coleman - RUABON
*[redacted] STREET
*W. R. Richard - WRICH
D. Wood - BRUSSELS

Before answering your questions about Aroclor 1242, which is to be explored to impregnate cables, please let me take up the matter of dodecylbenzene.

You state that in England petroleum cable oil has been largely replaced with dodecylbenzene, because of improved stability, insulation properties, impregnation properties, etc. We are well aware of these and additional advantages of dodecylbenzene as a cable dielectric fluid. We constantly have in mind Monsanto's strong position for supplying dodecylbenzene. The material is being studied here in the States, but to our knowledge has not yet found commercial use for this purpose.

If, as you say, in England it has replaced petroleum cable oil, please indicate market volume, sales price, and send us copy of the specifications for the dodecylbenzene being so used. If this thing is going commercial, we need to consider establishing dodecylbenzene as dielectric fluid offered by Monsanto.

We have been aware of the effort to investigate the possibility of using Aroclor 1242 as a cable fluid dielectric in England, especially, to accomplish fire-resistance deemed essential in the specialty application you seem to have. This interest does not exist in our country. When we bring up consideration of Aroclor 1242 for cables in the U.S.A., the electrical people point out all of the things that could be wrong with using Aroclor in cables.

You mentioned the power factor requirement sought. It seems to us almost unrealistic that you can deliver a power factor of 0.1% at, say, 50 cycles and 85°C. Such a value could be obtained by the user employing effective refinement immediately prior to use. However, when noting the way this cable is to be made, there is much question as to whether such low power factor values could be maintained in this process.

We appreciate your explanation that a permittivity of five, which is typical for Aroclor 1242, and which is much higher than the value for mineral oil, may be acceptable because the length of the particular cable will be relatively very short.

0079185

This, of course, also serves to indicate that the market for this type cable is highly specialized and limited.

To give you some help on the questions about gas solubility, we refer to Frank Clark's book, INSULATING MATERIALS FOR DESIGN AND ENGINEERING PRACTICE, John Wiley and Sons. I believe that either you or Dave have this book. The solubility of air in Arecior 1254 is given on page 197. This indicates air solubility--percent by volume, as being 2.1% at 20°C; 5% at 60°C; and 8% at 100°C.

On page 204, gas solubility in transformer Pyranol is given. Expressing the results in percent by volume after the reduction of all gas values to 760 mm of pressure at 25°C., and the liquid volume to 25°C., the solubility of typical gases in transformer Pyranol is given as follows:

Carbon dioxide	71% at 25°C.	47% at 100°C.
Air	5.7%	4.9%
Nitrogen	6.0%	4.8%
Hydrogen Chloride	37.8%	50.9%

While we do not seem to have similar data for Arecior 1242, the foregoing will give reasonable guidance.

Best regards.

P. G. Benignus

/ecd
*Copy of call report

0079186