Monsanto

St. Louis - General Office

DATE November 28, 1967

SUBJECT LIGHTING CAPACITORS--EUROPE

TO Colin R. Coleman - RUABON

H. S. Bergen - HBERG
G. R. Buchanan
W. Cresce - J CRES
J. Durland - TOKYO (MJ L)
T. Katayama - TOKYO (MMK)
D. Mowry - TOKYO (MJ L)
R. H. Munch - SECOND STREET
W. R. Richard - WRICH
E. S. Robson - EROBS
S. Setoh - TOKYO (MMK)
D. Wood - BRUSSELS

Dear Colin:

Thank you very much for your November 20, 1967 memo which gives us an up-to-date view of the competitive lighting capacitor business in the UK, Poland, Czechoslovakia, Hungary, Spain, Germany, France, Italy, Sweden, and Denmark.

We also appreciated your comment that Japan had been actively promoting metalized paper lighting capacitors in Europe, but that they do not appear to have made any progress.

In our country we do not have competition in lighting ballast capacitors from metalized paper nor from chlorinated naphthalene. These latter would not meet our acceptance standards. This is similar to the situation in the UK as long as you are able to hold your present British standard.

Down in Chili where I encountered Shizuki metalized paper capacitors replacing General Electric's Aroclor 1242 fixed paper capacitors, they do not have an effective national standard requirement. This would apply also to other countries in South America and probably also in Japan.

Since Shizuki is an affiliate of Mitsubishi, with whom we are also affiliated in Japan, we look forward to our Japanese associates more thoroughly exploring the metalized paper development in Japan, as it may relate to our future interest in Aroclor capacitors.

Thank you very much for your present appraisal. It is very difficult to assay the potential commercial significance, and for this reason we need to keep abreast of it, not regards our domestic business in the U.S., but relative to our international activity.

Best regards.

DSW 200666

Paul

P. G. Benignus

/ecd

MONSANTO

From (Name & Location) C. R. COLEMAN, Ruabon

Date : 20th November 1967

Subject : LIGHTING CAPACITORS - EUROPE

Referance : CRC/DPJ.

TO : P. G. BENIGNUS, St. Louis

cc. H.S. Bergen, St. Louis
G.R. Buchanan, St. Louis
J. Cresce, St. Louis
J. Durland, Tokyo
T. Katayama, Tokyo
D. Mowry, Tokyo
R.H. Munch, St. Louis
W.R. Richard, St. Louis
E.S. Robson, St. Louis
S. Setoh, Tokyo
D. Wood, Brussels

Regarding your memo of 4th November, I offer the following comments from our viewpoint :

1) Over a year ago, I was told that the Japanese had been actively promoting metallized paper lighting capacitors in Europe. However, they do not appear to have made any progress in the meanwhile.

2) Bosch, in Germany, is the only company in Europe that produces competitive metallized paper lighting capacitors. They produce their own metallized paper and pioneered the process. They have recently become more agressive at the expense of Aroclor.

3) In the U.K., a tough National Standard protects Aroclor against unfavourable economics, but there is a 'leakage round the plug' which is at present chlorinated naphthalene. There are influential moves to 'pull out this plug' which will produce a 'gush' of cheaper capacitors which will be either more chlorinated naphthalene, metallized paper, or possibly, plastics film.

4) Since manufacturers who use Aroclor do not have much interest in metallized paper, I have not spoken to anyone using Prodelec's Mixoflex.

In closing, I comment that when you get stung on your legs you soon shout!

C.R.C.

COLIN R. COLEMAN.

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1. A review of the use in Europe of metallized paper for fluorescent lighting capacitors up to 250 volts.

U.K.

In order to attain the recognised British Standard for fluorescent lighting fittings. capacitors have to undergo a severe endurance test. Only paper and foil capacitors impregnated with Aroclor or PJ (petroleum jelly) will pass this stringent test, and PJ is not chosen because it is more costly. Metallized paper and chlorinated naphthalene capacitors fail this test.

However, British Lighting Industries (Atlas-Thorn) the largest manufacturer of lighting fittings (who is the largest customer of the manufacturers of this type of capacitor), prefers to use chlorinated naphthalene capacitors for cheaper lightling fittings because they consider :

1. The official standard has been set unnecessarily high for domestic conditions and a chlorinated naphthalene capacitor is 2 to 3 pence cheaper than an Aroclor capacitor.

2. A capacitor that does not contain a liquid that could leak and damage goods and furnishing below is safer.

For these reasons, chlorinated naphthalene has been the main competitor of Aroclor up to this year.

During August, we visited RIC, one of the smaller but more aggressive capacitor manufacturers, who told us that they had suffered a setback to their export business in Sweden due to competition from metallized paper capacitors from the German manufacturer Bosch. They claimed that Bosch had driven Aroclor capacitors out of this market not only on price but also on alleged technical merits, and requested assistance from Monsanto to promote the use of Aroclor capacitors on technical grounds. They wanted to introduce a line of metallized paper capacitors impregnrated either with Aroclor or mineral oil but were at present unable to do this because there was not a satisfactory supplier of metallized paper in the U.K. They felt that their resources alone were not large enough to set up a plant for metallizing paper and were considering approaching other capacitor manufacturers to form a new company for this purpose.

In the production of conventional paper and foil capacitors it was not possible to gain the maximum advantage from automatic winding machines because the tabbing operation caused these machines to be almost as slow as hand-winding. If metallized paper were used. the tabbing operation could be eliminated and the full benefits of automation realised. They suggested that Monsanto ought to investigate the use of paper metallized with aluminium and impregnated with Aroclor and find out the technical and economic advantages of this system. The Finnish paper manufacturer, Tervakoski, was producing aluminium metallized paper but capacity was extremely limited and delivery

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times long. No prices were available. Tervakoski have also carried out experiments with alumina-loaded metallized paper but these have only been partially successful.

They also said that Bosch was attempting to sell metallized paper capacitors in the U.K., but was prevented by failure to pass the British Standard tests. They believed that Bosch were exerting pressure in various places to obtain an easement of these tests and if they were successful the effect on Aroclor would be disasterous. During a 'phone call in September, they told me that Bosch were claiming that their capacitors passed the tests and were now selling in the U.K.

Our largest customer, BICC, whom we believe to produce about half the total of U.K. Aroclor fluorescent lighting capacitors claim to be under severe competition from chlorinated naphthalene. They are at present sheltering behind the British Standard, but are investigating how they can defend themselves if this Standard is relaxed. One means of defence would be to make metallized paper capacitors, probably setting up their own metallizing plant. This could be linked with the use of the same paper in motor-start capacitors.

Another manufacturer, TMC, who are the largest producers of chlorinated naphthalene lighting capacitors, have made and tested experimental metallized paper capacitors impregnated with Aroclor 1242. These were tested at a higher stress than Bosch use in their oil-impregnated capacitors and were technically satisfactory. The project was later abandoned because it was considered unecomonical compared with their existing lines. They have also reported that the Japanese have been actively promoting metallized paper capacitors in Europe.

Poland

The factory that produces lighting capacitors carried out a study of the merits of metallized paper and mineral oil versus paper and foil with Arolcor and chose the latter on the grounds that less labour was required. This could be a case of technical reasons being used to explain a political decision. In this country the availability of foreign exchange is likely to influence strongly such decisions.

Czechoslovakia and Hungary

Both countries produce lighting capacitors exclusively with the Bosch metallized paper and oil system.

Spain

One firm, Fecha, carried out some experiments with locally produced metallized paper and Aroclor. They experienced a high failure rate and abandoned the project. I suspect that the reason was poor quality metallizing; they used aluminium.

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Germany

Since this is the home territory of Bosch, it is likely that almost all the lighting capacitors are produced with metallized paper and oil, but, since we do not cover this country for Aroclor, this is only a guess. The German Standard for lighting capacitors is less stringent than the British Standard and only requires an over-voltage of 1.3 times the working voltage compared with 1.7 times for the British Standard. The mains voltage is 220 against 240 in the U.K., which also helps.

France

Again, this is a country that we do not cover for Aroclor but I believe that the use of metallized paper for lighting capacitors is small. Car ignition capacitors are made with askarel, unlike most other European countries. Bolboré produces zinc metallized paper.

Italy

We have not received reports of the use of metallized paper.

Sweden

The local manufacturer, RIFA, uses metallized paper and oil exclusively.

Denmark

Bosch and RIFA metallized paper capacitors are imported.

2. Mixoflex

Apart from knowing of the existence of this product, I do not have any information about it.

Previously we produced DDB for Santomerse at Newport, but competition caused us to close the plant. We were aware that Pirelli in Italy had patented the use of DDB for cable impregnation but when we discussed this with BICC*, during December 1964, they told us that, due to the peculiar taxation system in Italy, there was an economic advantage in using a synthetic product rather than imported mineral oil.

The market did not appear to be large compared with detergent applications even if all the oil used in cables were replaced by DDB.

DDB has the advantage of being non-gassing under electrical stress to a higher temperature than mineral oil, but the same effect could be obtained with oil and additives and this was the most likely use of DDB itself. There appeared to be a slight technical advantage for hard DDB compared with biodegradable (i.e. straight-chain).

* BICC is the largest British cable manufacturer with whom we have a research agreement.

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