PROGRESS REPORT
MONSANTO INDUSTRIAL CHEMICALS CO.
Research and Development

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LOCATION	JOB NOS
Research Center	47-000-760.41- 1614028, 1615028

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PROJECT TITLE

DIELECTRICS - NEXT GENERATION

SUMMARY

New Capacitor Fluids - Data show that the best MCS 1588 can be obtained by Porocel treating distilled Santosol 100, mixing with sulfone and Porocel treating again (tan δ = .055). Next best is Porocel treatment of undistilled Santosol 100, blending and treating again (tan δ = .068). The latter process has been used in making samples sent to customers. We must establish whether or not the difference is reflected in capacitor performance. Over 90% of the Santosol 100 can be recovered on distillation. Column refining requires about 1% of Porocel on the weight of the Santosol 100 for initial treatment. Treatment of the Santosol 100, sulfone mixture requires about 0.4% Porocel.

MCS 1588 deteriorates slowly on storage. Data showing the extent of deterioration are tabulated below.

Date	Lined Drum tan δ	Black Iron Drum tan δ
4/18/74	.084	.114
7/12/74	.142	.204

Deterioration is slower in lined drums than in black iron. Properties can be restored by Porocel treatment. Use of an antioxidant to inhibit deterioration will be tried.

Claims have been made that adsorption refining of MCS 1588 might change the ratio of hydrocarbon to sulfone. Data tabulated below indicate that in any practical situation this would not be so:

	tan δ 60 Hz 100°C	DK 100°C.
Initial	.094	5.15
Porocel Treat.		
2%	.057	5.14
10%	.045	5.08
20%	.032	5.00
Attapulgus Treat.		
2%	.086	5.14
10%	.065	5.14
20%	.065	5.03

Dissipation factor improves with amount of adsorbent but DK is essentially constant changing only about 2% for a 20% adsorbent treat. Usual practice is 2%. Thus, there is no indication that DK of the fluid would change due to selective adsorption of the sulfone. This is true for both Porocel and Attapulgus earth treatment.

Test capacitors made up with excess sealant confirm the incompatability of two part epoxy sealants with our TXS system by causing a rapid increase in D.F. Currently life tests are in progress.

A research review was held with G.E. - Hudson Falls technical prople for discussing new dielectrics. Although the G.E. people remain committed to DOP for their non-PCB applications, the door is open for a joint research program of mutual interest.

Aroclor - Environmental - Europe - A trial incineration of liquid PCB was carried out at the Redland-Purle Incinerator at Ellesmere Port. Samples of stack-gas extracts are being analyzed at Newport. We are still awaiting the trial at the Re-Chem Incinerator at Pontypool. Apparently they are stock-piling supplies of support fuel (waste oils).

A further visit to Ruabon has confirmed that the fish ponds are still in good condition and are well stocked with fish. Analytical results from the fish samples taken at the end of April indicate that Aroclor 1242 has leveled off at about 2 ppm (whole fish wet weight), but that Aroclor 1254 is still increasing at about 3 ppm. The concentration of Aroclor 1242 in the pond water is about 1 ppb, but the level of Aroclor 1254 is considerably less. We are repeating the analyses of the pond waters at Louvain-La-Neuve to provide more accurate data.