Monsanto

FROM (NAME & LOCATION) B2SC P. G. Benignus

DATE February 17, 1972

SUBJECT Dow's Approach to Askarel Dielectrics

REFERENCE

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The askarels Dow is introducing are:

1) Brominated aromatics
2) Bromo-chloro aromatics

Price: $3/gallon on large volume

Physical properties:

Specific gravity: 1.6
Pour points: minus 16 C to minus 40 C
Flash and Fire points: none by Clev. open cup
Dielectric constant: 4 to 5.8 at 25 C
Power factor: 0.6% at 25 C and 60 Hz
Boiling range: 235 C to 260 C

The above are for the "neat" materials. They could be blended with chlorobenzenes to give typical properties of transformer askarels.

According to the above properties Dow's new askarels compare favorably, provided that they possess the required thermal - chemical stability for capacitors and adequate non-combustibility of arc formed gases for transformers.

If they do, then the final judgements rest with biodegradability.

This is probed by two methods:

1) The standard 20 day air-oxidation bio-test.

2) A probe type membrane test for oxygen loss. This result is obtained in 6 hours time and is said to correlate reasonably well with the result of the 20 day test.

Probably our people know these short term bio tests and may be able to assess the following information relative to Dow's 9 candidate askarels submitted to a number of our customers:

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Candidate	DK 25 C	Biodegradability
1	5.80-5.86	Not degradable
2	3.95-3.96	Slow
3	5.5	Not known
4	5.1	Slow
5	4.4	Slow
6	5.01	Not known
7	5.23	Degradable
8	5.8	Degradable
9	5.2	Degradable

All of this reflects that Dow's proposed askarels include a variety of Bromo and Bromo-chloro aromatic compounds. Nothing is given about toxicity.

For us to sort out and evaluate these nine Dow candidates to come up with a realistic appraisal for comparison with our judgements and assessments of Aroclor dielectrics or other possible dielectrics would constitute a monstrous work program. Looking ahead we see a lot of work but we find it difficult to see where the profits might be.

Unless some hidden favorable factors for Dow's candidates can be brought out, at this time it would appear to us that they ring essentially the same bell as do our Aroclor compounds or the Bromo-chloro biphenyls we have made.

What bothers me most is remarks I have heard that Dow is quite knowledgeable about biodegradability studies. Of course, Dow has always been astute on toxicity matters.

Paul

P. G. Benignus

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