ASKARELS
Meeting - Feb. 17 & 18, 1966

I. QUALITY IMPROVEMENT NEEDS:

A. Electrical Values Delivered to Customers

1) Resistivity 100°C.

a) Capacitor Aroclor; 5,000 X $10^9$ohm cm
(Present min. is 500 X $10^9$ohm cm)

b) Transformer askarels, 700 to 300 X $10^9$ohm cm.
(Present min. is 100 X $10^9$ohm cm)

2) Power Factor 100°C., 60 cyc.

a) Capacitor Aroclor; 0.15% to 0.3%

b) Transformer askarels; 1% to 3%
(Present min. is 5% as we package but on reaching the customer it may be above 20%)

3) Power Factor 100°C. 1KC

a) Capacitor Aroclor; 0.02% to 0.05%

b) Transformer askarels; 0.15% to 0.3%

REMARKS: French, German, and Japanese askarels conform with the above as delivered to us. Evidentally, this holds also as usually delivered to their customers. While we can and at times do meet these levels on our askarels as freshly earth refined and placed in our storage--by the time our askarels reach the customers they are usually considerably off these guide lines.

B. Biphenyl Content:

Capacitor Aroclor: 0.025% (250ppm) max.

(Competitive material shows none to merely a trace of biphenyl.)

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C. Stability:

Our present limits for capacitor Aroclor are:

| | Aroclor 1242 | Aroclor 1254 |
|---|---|---|
| 1) Hydrolysis | 0.5 ppm | 1.0 ppm |
| 2) Westinghouse Test | 1.0 ppm | ------- |
| 3) Monsanto (Thermal) | 0.4 ppm | 0.5 ppm |
| 4) Thermal-chemical | 0.75 ppm | ------- |

Anniston material runs from occasionally the indicated maximum to usually 40 to 70% of the maximum values, depending on the individual test.

More recently WGK has demonstrated their known ability to conform with the maximum limits. Given the right conditions, potentially WGK could do as well as Anniston.

However, the stability analysis of competitive material indicates that the quality of our normally best Aroclor made at Anniston is not as good as comparable material from Japan, England, Germany, and France, as compared in this same order in the following table:



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STABILITY COMPARISON

Test: of Foreign Made Chlorinated Biphenyl

| | Aroclor 1242 | Aroclor 1254 |
|---|---|---|
| Hydrolysis | Kanechlor 300; 0.1ppm | Kanechlor 500; 0.1ppm |
| | Pyroclor 1242; 0.08 ppm | Pyroclor 1254; 0.1ppm |
| | Clophen A-30; 0.04ppm | Clophen A-50; 0.17ppm |
| | Pyralene 1499; 0.04ppm | ---------- |
| Westinghouse | Pyroclor 1242; 0.30ppm | ---------- |
| | Clophen A-30; 0.20ppm | ---------- |
| | Pyralene 1499; 0.20ppm | ---------- |
| Monsanto (Thermal) | Kanechlor 300; 0.2ppm | Kanechlor 500; 0.2ppm |
| | Pyroclor 1242; 0.09ppm | Pyroclor 1254; 0.24ppm |
| | Clophen A-30; 0.09ppm | Clophen A-50; 0.34ppm |
| | Pyralene 1499; 0.09ppm | ---------- |
| Thermal-chemical | Kanechlor 300; 0.42ppm | ---------- |
| | Pyroclor 1242; 0.19ppm | Pyroclor 1254; 0.65ppm |
| | Clophen A-30; 0.35ppm | ---------- |
| | Pyralene 1499; 0.17ppm | ---------- |

The above stability values appear 3 to 5 times better than our stability specification limits and in many respects 2 to 3 times as good as our best Aroclor made at Anniston.

Accordingly, our stability goals needed to be competitive in stability quality appear clear and orderly.

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II. EARTH TREATING EFFICIENCY:

This is directed at moisture removal and improvement of Power Factor and Resistivity.

It is not known whether we use the best available earth refining process. Variables are type earth, minus 200 mesh versus 60/90 vs 30/60; drying to below 1% moisture; conditioning temperature; amount of earth; temperature and time of treating; method of treating, i.e., batch versus percolator; earth removal; storage of conditioned earth.

III. NEED TO CLEAN UP TCB and TTCB ELECTRICALLY

There are no electrical quality specifications applicable to Hooker supplying TCB and TTCB for transformer askarels. At prevailing prices Hooker is not receptive to such restrictions.

The electrical properties of our incoming chlorobenzenes are quite bad and we do not check them.

It would seem prudent for us to earth refine these materials, check the results, and not use them if they do not respond satisfactorily.

IV. PACKAGING:

A. Merits of Hot Packaging?

It helps eliminate moisture problem in our factory and would seem to create the moisture problem at the user end, if the material cools in storage and transit.



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B. Contamination

1) From loading lines and pumps

2) From the packages

3) From taped sample bottles

C. Drums

1) Are our drums adequate for international shipment?

2) One coat phenolic vs two coats phenolic formerly used vs galvanized formerly used, vs galvanized 16 gauge and rolling rings used by Bayer.

3) Bung gasket material?

V. TEST METHODS

A. Electrical Tests

1) Power factors and resistivity methods, WGK versus Anniston versus customers

2) Need for capacitance standard to check bridges.

3) Anniston was reading low power factor and also resistivity incorrectly.

4) Both Anniston and WGK probably would read high power factors incorrectly.

5) Need PF and Resistivity procedures properly written for customer use, especially international. This is directed at instructions that might give chance for customer correlation with our methods.

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