DIRECTIONS FOR TEST NO. 14-46-41

SUBJECT: Acid Number of Solid Aroclors

METHOD: Titration with Alkali using Phenolphthalein

Procedure

Dissolve 50 grams of the Aroclor in 50 cc. benzene in a 400 cc. beaker, warming to hasten solution. Add 50 cc. 3A alcohol, 200 cc. distilled water, heat to boiling, add 1/2 cc. 1% phenolphthalein solution, and titrate, in the case of the distilled Aroclors with 0.01 N sodium hydroxide solution, and in the case of crude Aroclors with 0.1 N sodium hydroxide solution, to a faint pink color which is permanent for at least two minutes after vigorous stirring. A reagent blank should be run concurrently. The acidity of the sample is calculated as milligrams of sodium hydroxide required per gram sample.

Calculations

0.01 N NaOH Acid No. = cc. titration x 0.4/ sample weight
For 50 gm. " " = (cc. tit. - cc. blank) x 0.008

0.1 N NaOH Acid No. = cc. titration x 4.0/ sample weight
For 50 gm. " " = (cc. tit. - cc. blank) x 0.08

Apparatus

10 cc. burette in .05 divisions.

Conversions

1. To obtain Neutralization Number in terms of KOH, multiply the Acid Number in terms of NaOH by 1.402. Inverse factor is 0.713.

2. Multiply the Acid Number by 1000 to obtain the parts of NaOH required to neutralize one million parts of Aroclor. Thus Acid Number of 0.0006 is equivalent to 0.6 parts of NaOH per million parts of Aroclor.

3. The large amount of water used causes sharper separation of the aqueous layer from the non-aqueous layer, thereby making the endpoint more easily distinguishable. If the titration is carried out against a very light background or in a fluorescent light, the end point is easily seen.

4. Aside from free acid as a cause for NaOH consumption, ferric chloride which is usually present in small amounts, also consumes NaOH in neutralization to phenolphthalein. It therefore follows that an Aroclor of very low acid number must be also extremely low in ferric chlorids.

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