

Monsanto Chemical Company

Anniston Method No. 14-42-48

SUBJECT: Acid Number of Liquid Aroclors

METHOD: Titration with Alkali using Phenol Red

Scope

The Acid Number is the weight in milligrams of sodium hydroxide required to neutralize one gram of Aroclor to pH 7.6. It thus includes any hydrochloric acid, ferric chloride, and other inorganic or organic constituents having acid characteristics. It corresponds to the Neutralization Number of ASTM Designation D188 except that the latter is expressed in terms of KOH instead of NaOH and has a somewhat higher (phenolphthalein) end point.

Procedure

To 100 ml. of adjusted (pH 7.6) solvent containing indicator slowly add 0.1 N NaOH dropwise until the color corresponds approximately to pH 7.6 when compared against a suitable reference solution. Readjust if necessary to maintain pH 7.6. Add 50 grams (± 1 g.) of Liquid Aroclor and mix well. Titrate from micro buret with 0.01 N NaOH until the original red color of the solvent is restored. A portion of solvent in a similar container is a useful reference in determining the end point. The match is governed by estimation of the intensity of red because the hue is not exactly reproduced on account of the yellow color introduced by the Aroclor. 1 ml. of 0.01 N NaOH = 0.4 Mgm. NaOH. Calculate in terms of Mgm. NaOH per gm. of sample. Report to 4 decimal places.

$$\frac{\text{ml. of 0.01 N NaOH} \times 0.4}{\text{g. of sample}} = \text{Mgm. NaOH/gm.}$$

Example: If titration is 0.08 ml. for 50 g. of Aroclor, the Acid Number is $0.08 \times 0.4/50 = 0.00064$ Mgm. NaOH/gm. Report as 0.0006.

Solutions Required

Solvent: Mix 600 ml. of benzol, 200 ml. of 3-A alcohol and 200 ml. of acetone. Add 5 ml. of 0.2% phenol red solution.

Phenol Red Solution, 0.2%: To 0.1 gm. of dry indicator in a small beaker add exactly 2.0 ml. of 0.1409 N NaOH. Stir to dissolve and dilute with 3-A alcohol to 50 ml.

Reference Buffer pH 7.6: Dissolve 0.41 g. NaH_2PO_4 and 0.59 gm. Na_2HPO_4 (both anhydrous) in 100 ml. of water. Add 0.5 ml. of 0.2% phenol red. Solution is used for reference in adjusting the solvent if LaMotte pH 7.6 color standard is not available.

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Acid Number of Liquid Aroclors - 2 -

Standard 0.01 N NaOH: 5 ml. of .5 N NaOH to 250 ml. vol. of 3-A alcohol. Protect at all times from atmospheric CO₂.

Note

By using 250 ml. acetone in solvent instead of 200 ml. a 100 gm. sample of 1254 may be taken for analysis.

FAB:cm
1-30-45

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