Monsanto Chemical Company
ANNISTON, ALABAMA

DIRECTIONS FOR TEST NO. 14-42-41

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 hydrocloric 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 cc. of adjusted (pH 7.6) solvent containing indicator add 50 grams (± 1 g.) of Aroclor 1254 or 1260 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 cc. of 0.01 N NaOH = 0.4 Mgm. NaOH. Calculate in terms of Mgm. NaOH per gm. of sample. Report to 4 decimal places.

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

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

Solutions Required

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

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

Reference Buffer pH 7.6: Dissolve 0.41 g. NaH^2PO^4 and 0.59 gm. Na^2HPO^4 (both anhydrous) in 100 cc. of water. Add 0.5 cc. of 0.2% phenol red. Solution is used for reference in adjusting the solvent if LaMotte pH 7.6 color standard is not available.

Standard 0.01 N NaOH: Dilute 7.1 cc. of 0.1409 N NaOH to 100 cc. Protect at all times from atmospheric carbon dioxide.

DSW 330711

Note

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

11/4/41 (over)

STLCOPCB4077355

Reference

The method is a modification of Pittsfield works method H-8955613 where phenol red is used as indicator. In the modification the solvent has been changed to permit an increase in the amount of sample from 10 gm. to 50 gm. and the end point is further defined as pH 7.6 which is the mid-point of the phenol red color change.

ABG-p
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