MONSANTO CHEMICAL COMPANY
W. G. KRUMMRICH PLANT LABORATORY

STANDARD ANALYTICAL METHOD

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ATTACHMENTS:		

PRODUCT: Aroclors, Pyranols, Inerteen, and Electrical Grade Chlorobenzenes

TEST: Acidity (mg. KOH/g.)

THIS FORM: ☐ SUPERSEDES METHOD _____ ISSUED ON 3/11/53
☒ REVISES INSTRUCTIONS

SCOPE

The acidity of chlorinated biphenyls and benzenes is determined by dissolving the sample in benzene and methanol and titrating the free acidity with standard KOH to phenol red. This test is suitable for material "as received" and after the "corrosion test".

EQUIPMENT

a. Buret, micro, 5 cc., Fisher Scientific Company, Cat. No. 20-109, or equivalent.

b. Usual laboratory apparatus.

REAGENTS

a. Methanol, 99.9%, Carbide and Carbon Company, 10 S. Brentwood, St. Louis, Mo., or equivalent.

b. Benzene, Fisher Cat. No. B-245, or equivalent.

c. Phenol red, Fisher Cat. No. 5-983-8, or equivalent.

Saturated solution in methanol.

d. Potassium hydroxide, AR pellets, (Fisher Cat. No. P-250, or equivalent) 0.01 N solution.

Weigh accurately on a beam balance 33.0 (± 0.05) grams of KOH. Dissolve in 1 liter of methanol. Pipet 5 ml. of the methanolic KOH in 1 ml. phenol red solution into a 250 ml. volumetric flask and dilute to the mark with neutral methanol.

SAFETY

Chlorinated benzenes and biphenyls are irritating to the skin. The vapors of the hot materials are irritating to the eyes and upper respiratory system. If accidental contact is made with the eyes, flush immediately with large quantities of water and get immediate medical attention. Exercise caution to avoid possible thermal burns through contact with hot materials of equipment.

SAFETY (Cont'd.)

Benzene and methanol are flammable and toxic liquids. Take proper precautions to keep away from sources of ignition and avoid contact with the skin.

DETERMINATION

1. Measure, by graduate, 100 ml. of benzene and 100 ml. of methanol into one of two rubber stoppered 500 ml. Erlenmeyer flasks.

2. Add 0.5 ml. of phenol red indicator and neutralize with 0.01 N KOH to the first definite pink color.

3. Pour the mixture back and forth between the two flasks several times. If the solution is still pink, divide it equally between the two flasks. If not, titrate with KOH until pink and repeat mixing procedure. Continue until mixture stays pink.

4. Weigh one of the flasks on a beam balance and add 75 ± 5.0 g. of the sample into the flask.

5. Titrate the sample solution with 0.01 N KOH until the color matches that of the solution in the other flask.

CALCULATION

$$\text{Acidity (mg. KOH/g.)} = \frac{\text{ml. of 0.01 N KOH} \times 0.56}{\text{sample weight}}$$

Report results to the nearest 0.001 mg. KOH/g.

Duplicate results should agree within ± 0.001 mg. KOH/gram.

PRECISION

Based on 20 replicate determinations by different analysts using different apparatus, the standard deviation of this method has been determined as ± 0.001 mg. KOH/g.

DISCUSSION

This test is sometimes referred to as "Acid Number".

REFERENCE

a. Laboratory Notebook Reference 159, 34.

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