Kentucky Method 64-262-08
Dated 03/31/08

TEST METHOD FOR THE ANALYSIS OF BASE NUMBER

1. SCOPE

1.1 This method is designed for the determination of the titratable alkalinity (Base Number) of the resin system found in calcium sulfonate structural steel coatings.

2. MATERIALS AND REAGENTS

2.1 Balance accurate to 0.001g

2.2 Hot plate

2.3 Burette, 50 ml capacity with 0.1 ml graduations

2.4 Erlenmeyer flasks, 250 ml wide-mouth

2.5 Beakers, 250 ml

2.6 Volumetric flask, 100 ml

2.7 Class A 50 ml pipet

2.8 Buchner filter funnel, 83mm

2.9 Whatman 42 filter papers, 70 mm

2.10 Magnetic stir bar

2.11 Glass boiling beads

2.12 Acetic Acid, 0.2 N

2.13 Ammonium Hydroxide, 0.2 N

2.14 Heptane, reagent grade

2.15 Isopropyl Alcohol, reagent grade

2.16 Ethanol, reagent grade

2.17 Distilled water, ASTM D1193 Type II

2.18 Neutral red-Bromothymol blue mixed indicator

3. PREPARATION OF STANDARD SOLUTIONS

3.1 Neutral red-Bromothymol blue mixed indicator solution
0.05 g Neutral red and 0.05 g Bromothymol blue in 100 ml volumetric flask. Dilute to mark with ethanol and mix well.

4. SAMPLE PREPARATION

4.1 To a tared 250 ml Erlenmeyer flask add 1.0 g of sample. Record weight.

4.2 Effect solubility of the sample by the addition of 4 ml Heptane. Add glass boiling beads and swirl flask until sample is completely dissolved.

4.3 Pipet 50 ml 0.2N Acetic acid into flask.

4.4 Add 10 ml Isopropyl alcohol and 40 ml distilled water to the flask.

4.5 Place the flask on a hot plate and carefully bring to a boil for 5-10 minutes to distill the Heptane away.

4.6 Remove flask from hot plate and place in cool water bath; cool to room temperature.

5. TITRATION PROCEDURE

5.1 Add 10 drops Neutral red-Bromothymol blue mixed indicator to the flask.

5.2 Titrate to a gray (colorless) endpoint using 0.2N Ammonium Hydroxide (See Note 6.1).

6. NOTES

6.1 At the beginning, the solution will be rose colored. As the endpoint is approached the solution will turn colorless; this is the endpoint. If the sample is over-titrated the solution will turn a faint blue color.

6.2 For products with an expected Base Number of less than 150, increase sample size to 1.5-2.0 grams, and/or utilize 25 ml 0.2N Acetic acid.

7. CALCULATIONS

7.1 Calculation for Base Number:

$$\frac{[(\text{ml } CH_3COOH \times \text{N } CH_3COOH) - (\text{ml } NH_4OH \times \text{N } NH_4OH)]}{\text{Sample wt}} \times 56.1 = \text{Base Number}$$

8. REPORT

8.1 Report the weights of the duplicate coating samples to the nearest 0.001g.

8.2 Report the duplicate Base Number results.

8.3 Results should be considered suspect if duplicate analyses differ by more than 5% RPD when performed by a single analyst.

APPROVED _____
DIRECTOR
DIVISION OF MATERIALS

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