

BETZ ENTEC

347

WARNING—TOXIC

KEEP OUT OF REACH OF CHILDREN.

HARMFUL IF SWALLOWED. Causes skin irritations. Do not get into eyes, on skin or clothing. Wear rubber gloves and goggles or face shield when handling.

In case of contact with skin, wash well with soap and water. In case of contact with eyes, flush promptly and thoroughly with clear water. In case of ingestion or contact with eyes, secure immediate medical attention.

ENVIRONMENTAL HAZARDS

This product is toxic to fish. Treated effluent should not be discharged where it will drain into lakes, streams, ponds, or public water. Do not contaminate water by cleaning of equipment, or disposal of wastes. Apply this product only as specified on this label.

DIRECTIONS FOR USE

Betz Entec 347 aids in the control of objectionable slimes formed by Algae in industrial recirculating cooling-tower water equipment.

INITIAL DOSE: When the system is noticeably fouled, apply 7.7 to 15.4 fluid ounces of Betz Entec 347 per 1000 gallons of water in the system. Repeat until control is achieved.

SUBSEQUENT DOSE: When microbial control is evident, add 1.5 to 15.4 fluid ounces of Betz Entec 347 per 1000 gallons of water in the system every 4 days, or as needed to maintain control. The frequency of feeding and the duration of treatment depend upon the severity of slime and algae deposits. Badly fouled systems must be cleaned before treatment is begun. Apply at a point in the system where the product will be uniformly mixed.

Do not reuse empty container. Send to drum reconditioner, or destroy by perforating or crushing and bury in a safe place.

FOR INDUSTRIAL USE ONLY. Technical advice regarding specific site problems is available from BETZ ENTEC.

Contents: LIQUID

Active Ingredients

Copper sulfate (anhydrous) 9.6%
N-Alkyl (C₁₂-40%, C₁₄-50%,
C₁₆-10%) dimethyl benzyl
ammonium chloride 5.0%

Inert Ingredients* 85.4%

*Inert ingredients include solubilizing and dispersing agents.

EPA Reg. No. 34571-8

NET WEIGHT AND VOLUME
As Marked on Container

WEIGHT PER GALLON OF PRODUCT
9.4 Pounds (60F)

ELC155 7512-S

KEEP CONTAINER COVERED—PROTECT FROM FREEZING

BETZ ENTEC, Inc. / WILLOW GROVE, PENNSYLVANIA

ONYX STANDARD
ANALYTICAL PROCEDURE

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No. OSD-41

Date: 11-27-74

DETERMINATION OF ACTIVITY OF
QUATERNARY AMMONIUM COMPOUNDS
BY THE EPTON PROCEDURE

Purpose

To determine the activity of solutions of quaternary ammonium compounds by an anionic titration and calculating the activity from the titration obtained.

Apparatus

Titration cylinder, 100 ml graduate with glass stopper
Burettes, 10 or 25 ml capacity, - must be graduated in 0.05 ml or less
Volumetric flasks, 500 ml and 1,000 ml.
Volumetric pipettes, 10 ml and 15 ml.

Reagents

1. Anionic Solution - Sodium Lauryl Sulfate
(Maprofix 563 - 99.0%) Onyx Chemical Company
For Standardization of .008 N solution refer to OSR-1
2. Chloroform, Analytical Grade
3. Bromphenol blue indicator solution
Dissolve 0.10 grams of bromphenol blue indicator in 50 ml of ethanol and 50 ml of water.
4. Salt Buffer Solution
Dissolve 100 gms. of sodium sulfate and 10 gms. of sodium carbonate in distilled water and dilute to 1,000 ml.

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4. Salt Puffer Solution
Dissolve 100 gms. of sodium sulfate and 10 gms. of sodium carbonate in distilled water and dilute to 1,000 ml.

Procedure

1. Accurately weigh the required weight of sample (to the nearest milligram) into a 250 ml. beaker.

$$\frac{50 \times \text{Normality of titrant} \times \text{M.W. of Cationic}}{\% \text{ Expected Activity}} = \text{Grams of Sample Required}$$

2. Add 150 ml. of distilled water. Stir to dissolve, warming on the steam bath if necessary.
3. Quantitatively transfer the sample solution to a 500 ml. volumetric flask and dilute to volume with water at room temperature. Mix well.
4. With a 10 ml. volumetric pipette, transfer an aliquot of the dilute material to the 100 ml. stoppered graduated cylinder. Into a 50 ml. graduated cylinder add 25 ml. of chloroform and 25 ml. of salt buffer solution and 5 drops of bromphenol blue indicator. Add this mixture to the bottle containing the aliquot of the diluted sample.
5. Titrate the contents of the bottle with the standard anionic solution. At first, add the titrant in one ml. increments, shaking the bottle vigorously for 5-10 seconds after each addition. As the endpoint is approached, indicated by the increasing ease of separation of the layers, add suitable smaller increments of titrant. The endpoint is taken as the point at which the first definite purple color appears in the upper aqueous layer.

Calculation:

$$\% \text{ Activity} = \frac{\text{ml. anionic solution} \times \text{normality} \times \text{mol. wt.} \times 100}{*(\text{wt. of sample in aliquot}) \times 1000}$$

$$*\text{Weight of sample in aliquot} = \text{Original weight} \times \frac{10}{500}$$

Procedure (B) - FOR LOW QUATERNARY CONCENTRATION

1. Accurately weigh the required weight of sample into a 100 ml or 250 ml Stoppered graduated cylinder.

| <u>Concentration</u> | | <u>Sample size of BTC 2125</u> |
|----------------------|---|--------------------------------|
| 1,000 ppm | - | 30.0 |
| 1,500 ppm | - | 15.0 |
| 500 ppm | - | 45.0 |

2. Add 25 ml of chloroform and 25 ml salt buffer solution. Add 5 drops of bromphenol blue indicator.
3. Titrate the contents of the bottle with the standard anionic solution. At first, add the titrant in one ml. increments, shaking the bottle vigorously for 5-10 seconds after each addition. As the endpoint is approached, indicated by the increasing ease of separation of the layers, add suitable smaller increments of titrant. The endpoint is taken as the point at which the first definite purple color appears in the upper aqueous layer.

Calculation

$$\text{PPM of Quaternary} = \frac{\text{ml anionic solution} \times N \times \text{mol. wt} \times 1000}{\text{Weight of sample}}$$