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BRETOL Technical Data Sheet

1457-18

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### Pharmaceutical Applications

Because of its lack of odor and because it is a solid, BRETOL lends itself to special formulations, such as:

- Germicidal cleansing cake
- Antiseptic shampoo (with cationic detergents)
- Antiseptic tooth paste
- Products for feminine hygiene

Generally, a dilution of 1:7,500 (150 ppm) is satisfactory for this material.

These are suggested uses for formulators only. Products formulated from BRETOL may be subject to regulation under the Federal Insecticide, Fungicide and Rodenticide Act, in addition to regulations by the Food and Drug Administration. Clearance for the applications and/or uses must be obtained from the proper regulatory agencies.

BRETOL is also used in a formulation of solder flux. We can send you a separate data sheet on this.

### Chemical and Physical Properties

Chemically, BRETOL is higher alkyl dimethyl ethyl ammonium bromide; the higher alkyl radical being chiefly Cetyl ( $C_{16}$ ), and the balance consisting of stearyl ( $C_{18}$ ). Being such a mixture, the melting point is not sharp. BRETOL melts approximately between  $104-120^{\circ}C$ . The average molecular weight is 378. Based on this, the ionizable bromine is 21.2. The ionizable bromine found by analysis varies from 20.7 - 21.7. A 1% solution at  $25^{\circ}C$  has a pH of 6 - 8 using Universal Indicator.

### Method of Assay

#### Reagents

0.1N perchloric acid. About 8.5 ml. of 70% perchloric acid are dissolved in 1 liter of glacial acetic acid. Add 15 ml. of acetic anhydride cautiously in small portions, and allow to stand overnight.

0.1N sodium acetate solution to standardize the perchloric acid. Dissolve a weighed portion (about 0.53 gram) of dried sodium carbonate in enough acetic acid to make 100 ml. of solution. Potassium acid phthalate makes a very good and also convenient standard.

Crystal violet indicator: 1% in glacial acetic acid.

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Procedure

The regular acid-base titration is the procedure used here except that 25-50 ml. of glacial acetic acid is used as a solvent, and 10 ml. of 5% mercuric acetate is added prior to the titration. This solvent can be used for a potentiometric titration, using the standard pH meter with glass and calomel electrodes. Another set of electrodes can be used for this system, the glass electrode as indicator electrode and a silver wire with a thin coating of silver chloride as the reference electrode.

To test this procedure, aniline, pyridine, N-ethyl aniline, N,N-diethyl aniline, a-naphthylamine, and quinoline were used. Good indicator endpoints were obtained for these compounds. The procedure is generally applicable to weak bases with dissociation constants down to  $10^{-10}$ . The endpoints obtained in acetic acid are generally sharper than those obtained in nonacid solvents, and accuracy and precision of  $\pm 0.3\%$  can easily be obtained.

Calculation

$$\frac{(\text{titration}) (\text{normality}) (37.0)}{\text{wt. of sample in grams}} = \% \text{ BRETOL}$$

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