

Fine Organics Inc.

E.P.A. Reg. No. 1457-13

BRETOL

Active Ingredients:

Alkyl (85% C₁₆, 15% C₁₀) dimethyl ethyl ammonium bromide 100%

BRETOL is a highly effective antimicrobial quaternary ammonium compound and may be used to sanitize the following equipment and/or areas:

Milking machines	Floors (sluicing)	Animal cages	Cold storage rooms
Milk cans	Operating Theatre	Deodorization	Garbage cans
Dishes, glasses, & cutlery	Urinals	Walls	
Food processing equipment	Food storage bins	Mopping floors	

Recommended Dilutions:

BRETOL must be diluted before use, and the following concentrations are recommended:

- 1 oz. BRETOL to 20 gallons of water (400 ppm active ingredient) for previously cleaned and non-porous surfaces.
- 1 oz. BRETOL to 10 gallons of water (800 ppm active ingredient) for previously cleaned porous surfaces.

After sanitizing - all dishes, utensils, food processing equipment and other food contact surfaces must be rinsed with potable water before reuse.

Directions:

BRETOL is a free flowing, white, dry powder containing as its active ingredient a specially synthesized quaternary ammonium compound with high bactericidal properties and is compatible with alkaline builders and sequestering agents. In all applications an exposure period of at least two minutes should be maintained when the temperature of the solution is at least 75°F and the pH of the solution is 6.0 or higher. Use only in recommended use dilutions. Where infectious disease germs are present such as Ps. aeruginosa, surfaces should be rinsed with 1 oz. BRETOL to 5 gallons of water (1600 ppm active ingredient).

DANGER

KEEP OUT OF REACH OF CHILDREN

Corrosive. Causes eye damage and skin irritation. Do not get in eyes, on skin or on clothing. Wear goggles or face shield and rubber gloves when handling. Harmful or fatal if swallowed. Avoid contamination of food.

FIRST AID - In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. For eyes, call a physician. Remove and wash contaminated clothing before reuse. If swallowed, drink promptly a large quantity of milk, egg whites, gelatin solution or if these are not available, drink large quantities of water. Avoid alcohol. Call a physician immediately.

NOTE TO PHYSICIAN - Probable mucosal damage may contraindicate the use of gastric lavage. Measures against circulatory shock, respiratory depression and convulsion may be needed.

Do not reuse empty container. Destroy it by perforating or crushing. Bury or discard in a safe place.

MANUFACTURED BY:

Fine Organics Inc.

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technical data

Fine Organics Inc.

BRETOL

Chemical Name - Cetyl dimethyl ethyl ammonium bromide

BRETOL is a quaternary ammonium compound, the bromine being a completely ionizable form, as anion, and the organic portion of the molecule is the cation. Hence BRETOL, like other high molecular weight quaternary ammonium compounds is incompatible with soap and synthetic detergents; however, it is compatible with nonionic and cationic detergents. A small percentage of sodium nitrite as a rust preventative is also compatible with this material. BRETOL may be formulated with modified soda ash, trisodium phosphate, urea.

Organic soil reduces bacteriological activity of BRETOL. It is, therefore, recommended that cleansing should precede disinfecting.

BRETOL is a white, practically odorless, fairly free-flowing powder. It is soluble in water with a slight haze, soluble in alcohol and chloroform, moderately soluble in ethylene glycol, and slightly soluble in acetone; it is practically insoluble in ether, petroleum ether, benzene and glycerin. BRETOL is practically odorless and tasteless in dilutions recommended for use.

USES

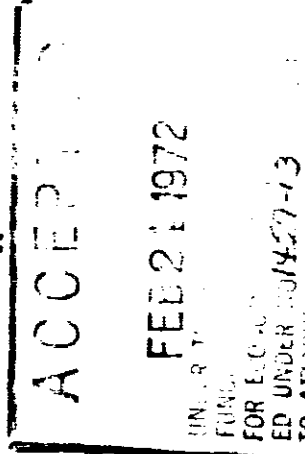
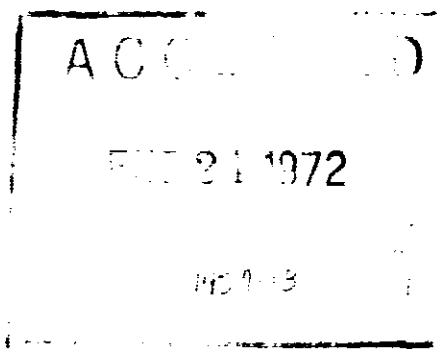
Veterinary Applications

BRETOL, being a non-volatile, stable disinfectant, will remain on a disinfected surface to maintain sanitary conditions. Scrupulous attention must be given to general cleanliness.

- 1) Treatment of cuts, wounds, skin infections of animals. An ointment in a hydrated lanolin-petrolatum base containing 0.1% to 0.5% BRETOL is recommended.
- 2) Disinfection of veterinary and surgical instruments. Since this material is a solid, a formulation consisting of the following will lend itself to tablet making:

BRETOL	4%
Sodium Nitrite	1%
Sequestering agent	1%
Snowflakes (soda ash and sodium bicarbonate, a mixture of Solvay)	1%

5-gram tablets of the above composition dissolved in 1 quart of water will render an effective solution for disinfection of blood-free instruments.



FOR E.C.A. UNDER 1457-13 TO ATTACHED FORM

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 (C₁₆), and the balance consisting of stearyl (C₁₈). Being such a mixture, the melting point is not sharp. BRETOL melts approximately between 100-120°C. The average molecular weight is 370. 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°C has a pH of 6 - 8 using Universal Indicator.

Method of AssayReagents

0.1N perchloric acid. About 2.5 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.

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 ± 0.3% can easily be obtained.

Calculation

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

EBB/mh
12/7/71