

# IBACT CU

Biodegradable antimicrobial active

- Oil Soluble antibacterial & antifungal agent

-Biodegradable

-Effective against gram positive & gram negative bacteria, fungi, yeast, and molds



## Product description

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- iBact CU is an oil soluble antibacterial and antifungal active ingredient
- Effective against gram positive and gram negative bacteria, fungi, yeast and molds
- Biodegradable
- Compatible with most of the other personal care ingredients
- Effective on pH range 3.5 to 10



## Why Use iBact CU?

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- Broad spectrum activity
- Near zero probability of bacterial resistance
- Biocompatibility
- Low environmental concern
- Biodegradable



## Acute and Genetic Toxicology Studies

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- Acute Dermal Toxicology Studies – LD 50 greater than 2000mg/kg body weight
- Acute Oral Toxicity – LD50 greater than 2000 mg/kg body weight
- Eye Irritation studies – iBact CU was found to be a mild irritant.
- Acute Dermal Irritation studies – iBact CU is a non-irritant



## Time Kill Test vs. Triclosan

### Time Kill Test vs. Triclosan

| Test Product   | Test Organism    | Exposure Time | Anti-Microbial Activity % Reduction |
|----------------|------------------|---------------|-------------------------------------|
| 0.3% Triclosan | Escherichia Coli | 30 secs       | 100.0                               |
|                |                  | 60 secs       | >99.9                               |
|                |                  | 2 mins        | >99.9                               |
|                | Staph. Aureus    | 30 secs       | >99.9                               |
|                |                  | 60 secs       | >99.9                               |
|                |                  | 2 mins        | >99.9                               |
| 0.1% iBact CU  | Escherichia Coli | 30 secs       | >99.9                               |
|                |                  | 60 secs       | >99.9                               |
|                |                  | 2 mins        | >99.9                               |
|                | Staph. Aureus    | 30 secs       | >99.9                               |
|                |                  | 60 secs       | >99.9                               |
|                |                  | 2 mins        | >99.9                               |

#### Conclusion

By above test result shows 0.1% iBact CU is more effectively working against microorganisms

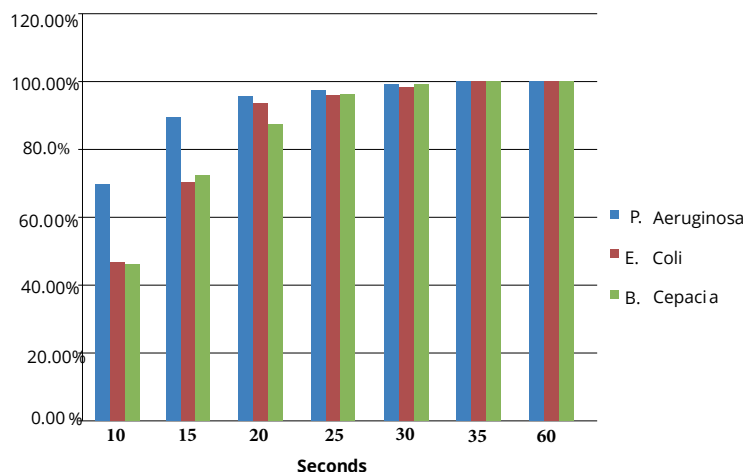
### Minimum Inhibitory Concentration (MIC Test)

| Test Organism     | Concentration of Powder*/MIC in percentage |      |      |     |     | MIC Summary |
|-------------------|--|------|------|-----|-----|-------------|
|                   | 0.005                                      | 0.01 | 0.05 | 0.1 | 0.2 |             |
| Staph. Aureus     | NG   | NG   | NG   | NG  | NG  | <0.0001     |
| Escherichia Coli  | NG   | NG   | NG   | NG  | NG  | 0.001       |
| Ps. Aeruginosa    | NG   | NG   | NG   | NG  | NG  | 0.001       |
| Salmonella Typhi  | NG   | NG   | NG   | NG  | NG  | 0.0005      |
| Aspergillus Niger | G  | G    | G    | G   | G   | 0.1         |
| Candida Albicans  | G  | G    | G    | G   | G   | 0.05        |

### Comparison with Other Anti-Microbials

| Test Organism                                    | iBact CU | Nanosilver | Triclosan | Triclocarban |
|--|----------|------------|-----------|--------------|
| Effective against gram (+) bacteria              | ✓        | ✓          | ✓         | ✓            |
| Effective against gram (-) bacteria              | ✓        | ✓          | ✓         | —            |
| Antifungal Properties                            | ✓        | ✓          | ✓         | —            |
| Fast acting (Time to complete kill)              | ✓        | —          | ✓         | ✓            |
| Biocompatibility (inert towards mammalian cells) | ✓        | —          | —         | —            |
| Multi-faceted mode of kill                       | ✓        | —          | —         | —            |
| Very low probability of bacterial resistance     | ✓        | —          | —         | —            |
| Minimal environmental concerns                   | ✓        | —          | —         | —            |
| Controllable release (tunable solubility)        | ✓        | —          | —         | —            |
| Cost Effective                                   | ✓        | —          | ✓         | ✓            |

## Challenge Test Result on Soap Bar using iBact CU @ 0.1%



### Application

- Soaps and Detergents
- Household Disinfectants
- Oral Care: Toothpastes and Mouth Rinse
- Hair Care: Shampoos and Conditioners
- Skin Care: Creams, Lotions, Hand Washes, Deodorants and Sanitizers
- Pharmaceutical Disinfectant for Instruments
- Industrial: Paint and Coating Industry as an antifungal and antifouling agent; plastics and fibers in Textile Industry



### Technical data

#### 1. Product information

|                        |  |
|------------------------|--|
| Appearance             | White to off-white powder  |
| Solubility             | water soluble, Freely soluble in alcoholic solvents and glycols.   |
| Identification         | A. By NMR: Should Conform<br>B. By MASS: Should Conform<br>C. BY IR: Should Conform<br>D. BY UV: Should Conform  |
| Loss on Drying @ 150 C | 1.0%   |
| 4-Chloroaniline        | > 150 ppm  |
| Organic Impurities     | 1. Chlorhexidine oxazinone analog<br>2. Specified unidentified impurity 1<br>3. Chlorhexidine amine<br>4. Chlorhexidine guanidine<br>5. Chlorhexidine urea |

#### 2. Formulation instruction

|                    |   |
|--------------------|---|
| Recommended dosage | applied around 0.05% to 0.15% in the finished formulation |
|--------------------|---|

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