

Alcohol Free Hand & Skin Sanitizer

Q What is Defensive™ Alcohol-Free, Foaming Hand & Skin Sanitizer?

A Defensive™ Alcohol-Free, Foaming Hand & Skin Sanitizer, based on the active ingredient Benzalkonium chloride, is a unique, Patented formulation featuring exceptional skin feel, conditioning and moisturizing properties. The efficacy of this product has been confirmed to reduce *S. aureus* 99.999% in as little as 15 seconds. Because we do not use ethyl alcohol, our product is non-flammable and non-drying to the skin. In addition, unlike alcohol-based products, Defensive™ does not require polymers or thickeners and as a result your skin does not feel sticky and your pores do not become clogged. Defensive™ Foaming Hand & Skin Sanitizer is in compliance with the FDA Final Tentative Monograph for OTC Hand Sanitizer preparations (leave-on sanitizers not requiring a rinse). Defensive™ Foaming Hand & Skin Sanitizer is shipped from our FDA Registered Establishment. Defensive™ Foaming Hand & Skin Sanitizer is NSF Registered and Approved under Category E3 for Food Handlers and is effective on MRSA & CA-MRSA.

Q Why Benzalkonium chloride-based Hand Sanitizers?

A Benzalkonium chloride-based Hand Sanitizers have distinct advantages over gelled alcohol hand sanitizers. While both product forms are FDA Monograph for “leave on” products, fast acting and allow for use without water or towels, Benzalkonium chloride based products are non-flammable, less drying to skin, and will not stain clothing. Published studies report that gelled alcohol gel hand sanitizers actually make the skin more contaminated, not cleaner, due to removal of protective natural skin oils and entrapment of dead skin cells by the polymer thickeners used in the gelled alcohol products. Benzalkonium chloride is a quaternary active ingredient with a history of use in leave-on, FDA Monograph anti-bacterial skin treatment products. Leave-on Hand Sanitizers should not be used as a substitute for proper hand washing and hygiene practices.

Q What makes Defensive™ Alcohol-Free, Foaming Hand & Skin Sanitizer unique?

A Patented Defensive™ Alcohol-Free, Foaming Hand & Skin Sanitizer produces a fast drying, non-sticky foam that contains unique conditioning and moisturizing ingredients, leaves the skin with a soft, silky after-feel, and does not contain polymer thickeners or silicones.

Q How Safe is Defensive™ Alcohol-Free, Foaming Hand & Skin Sanitizer?

A Defensive™ Alcohol-Free, Foaming Hand & Skin Sanitizer is very effective at reducing bacteria on the skin, yet very gentle on the skin and eyes as the Toxicity Profile below indicates:

| Toxicity Profile for Foaming Hand & Skin Sanitizer | |
|--|--------------------------------|
| Acute Oral LD50 | >5.0 g/kg, <i>Category IV</i> |
| Acute Dermal LD50 | >2.0 g/kg, <i>Category III</i> |
| Eye Irritation | <i>Category III</i> |
| Skin Irritation | <i>Category IV</i> |
| Sensitization | Not a Skin Sensitizer |

Q What are the affects of long-term, repeated use?

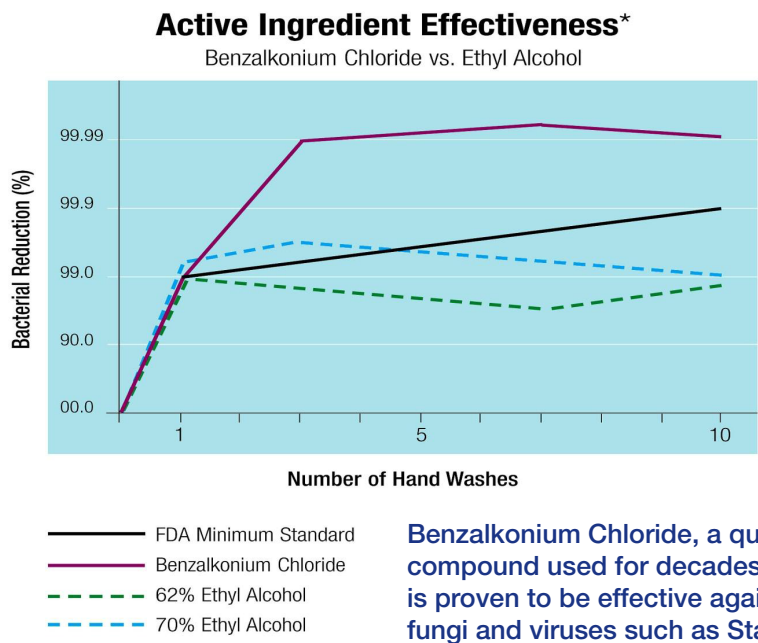
A In published studies, Benzalkonium chloride based Hand Sanitizers outperform alcohol-based products for long-term effectiveness. Alcohol-based products evaporate very quickly and are no longer effective after they are dry. Benzalkonium chloride remains active on the surface of the skin, continuing to kill bacteria for hours. Defensive™ Foam Hand & Skin Sanitizer actually gets better with repeated use!

Q What about efficacy?

A Defensive™ Foam Hand & Skin Sanitizer is very effective against a broad range of pathogenic bacteria in as little as 15 seconds as the Chlorine Equivalency and Time Kill Data illustrate (see Pages 3-4).

Q Don't hand sanitizers increase the likelihood of antibiotic resistance?

A Defensive™ Foam Hand & Skin Sanitizer is a broad-spectrum sanitizer with efficacy proven across a wide range of bacteria. Unlike antibiotics, topical sanitizers do not attempt to selectively eliminate only certain bacteria. The active ingredient causes the cell wall to lose electromagnetic bonds – rupturing the cell wall. This is very important because most in the medical community today believe that the recent proliferation of the “super bugs” and the anti-biotic resistant strains of bacteria are directly a result of this attempt to be selective in the elimination of some bacteria while sparing others. Defensive™ Foam Hand & Skin Sanitizer is designed to eliminate all bacteria on the skin. While some useful or harmless bacteria may be removed, this is essential in preventing mutations into “super bugs”.



Benzalkonium Chloride, a quaternary ammonium compound used for decades as a topical anti-microbial, is proven to be effective against a wide range of bacteria, fungi and viruses such as Staph, E. Coli, Athlete's Foot Fungus, Influenza, HIV and Hepatitis.

*SOURCE: AORN Journal, August 1998

Q Any special handling considerations?

A Defensive™ Foam Hand & Skin Sanitizer is a stable, water-based system. Care should be taken to avoid freezing. The shelf life of the product exceeds 24 months if kept in moderate conditions.

Q Is there a Time Kill Study for Defensive™ Foam Hand & Skin Sanitizer?

A

| Organism | Test Population Control (CFU/mL) | Number of Survivors | % Reduction | Log Reduction |
|--|----------------------------------|-------------------------|-------------|--------------------------|
| <i>This study is designed to examine the rate of kill of a test substance after inoculation with a test organism. Results are expressed in percent reduction and log reduction of the test organism. Exposure time = 15 seconds.</i> | | | | |
| Campylobacter jejuni <i>ATCC 29428</i> | 1.02 x 10 ⁷ | < 1.0 x 10 ² | > 99.999 | > 5.00 Log ¹⁰ |
| Candida albicans <i>ATCC 10231</i> | 1.60 x 10 ⁵ | 6.0 x 10 ³ | 96.30 | 1.42 Log ¹⁰ |
| Clostridium difficile (C. Diff. Veg) <i>ATCC 9689</i> | 3.40 x 10 ⁶ | < 2.0 | > 99.9999 | > 6.20 Log ¹⁰ |
| Enterococcus faecalis (VRE) <i>ATCC 51575 (Vancomycin Resistant)</i> | 1.12 x 10 ⁶ | 3.2 x 10 ¹ | 99.99 | 4.54 Log ¹⁰ |
| Escherichia coli <i>ATCC 11229</i> | 3.80 x 10 ⁶ | 4.0 | 99.999 | 6.00 Log ¹⁰ |
| Escherichia coli O157:H7 <i>ATCC 35150</i> | 1.26 x 10 ⁶ | < 2.0 | > 99.999 | > 5.80 Log ¹⁰ |
| Klebsiella pneumoniae <i>ATCC 4352</i> | 1.10 x 10 ⁶ | 2.0 | 99.999 | 5.70 Log ¹⁰ |
| Klebsiella pneumoniae (NDM-1 positive) <i>CDC 1000527 ("New Delhi" superstrain)</i> | 7.40 x 10 ⁵ | < 5.0 | > 99.9999 | > 5.20 Log ¹⁰ |
| Listeria monocytogenes <i>ATCC 19117</i> | 4.70 x 10 ⁶ | 1.9 x 10 ³ | 99.90 | 3.39 Log ¹⁰ |
| Pseudomonas aeruginosa <i>ATCC 15442</i> | 3.50 x 10 ⁶ | < 2.0 | 99.9999 | > 6.20 Log ¹⁰ |
| Salmonella choleraesuis serotype enteritidis <i>ATCC 4931</i> | 6.80 x 10 ⁵ | 2.0 | > 99.999 | > 5.50 Log ¹⁰ |
| Salmonella choleraesuis serotype paratyphi <i>ATCC 8759</i> | 5.60 x 10 ⁵ | < 2.0 | > 99.999 | > 5.50 Log ¹⁰ |
| Salmonella choleraesuis serotype pullorum <i>ATCC 19945</i> | 8.90 x 10 ⁵ | < 2.0 | > 99.999 | > 5.70 Log ¹⁰ |
| Salmonella choleraesuis serotype typhimurium <i>ATCC 23564</i> | 7.70 x 10 ⁵ | 6.0 | > 99.999 | > 5.10 Log ¹⁰ |
| Salmonella typhi <i>ATCC 6539</i> | 1.27 x 10 ⁶ | 2.0 | 99.999 | > 5.80 Log ¹⁰ |
| Shigella dysenteriae <i>ATCC 13313</i> | 1.30 x 10 ⁶ | < 2.0 | > 99.999 | 5.80 Log ¹⁰ |
| Shigella flexneri <i>ATCC 12022</i> | 1.39 x 10 ⁶ | 2.8 x 10 ¹ | 99.99 | 4.69 Log ¹⁰ |
| Shigella sonnei <i>ATCC 25931</i> | 2.43 x 10 ⁷ | < 2.0 x 10 ¹ | 99.9999 | 6.09 Log ¹⁰ |
| Staphylococcus aureus <i>ATCC 6538</i> | 6.70 x 10 ⁶ | < 2.0 | > 99.9999 | > 6.53 Log ¹⁰ |
| Staphylococcus aureus (MRSA) <i>ATCC 33592 (Methicillin Resistant, aka HA-MRSA)</i> | 1.23 x 10 ⁷ | 3.8 x 10 ³ | > 99.9 | 3.51 Log ¹⁰ |
| Staphylococcus aureus (CA-MRSA) <i>Community Acquired Methicillin Resistant (USA 400)</i> | 1.18 x 10 ⁶ | 5.8 x 10 ² | > 99.9 | > 3.30 Log ¹⁰ |

Q Is there a Time Kill Study for Defensive™ Foam Hand & Skin Sanitizer? (continued)

A

| Organism | Test Population Control (CFU/mL) | Number of Survivors | % Reduction | Log Reduction |
|--|----------------------------------|-----------------------|-------------|--------------------------|
| <i>This study is designed to examine the rate of kill of a test substance after inoculation with a test organism. Results are expressed in percent reduction and log reduction of the test organism. Exposure time = 15 seconds.</i> | | | | |
| Staphylococcus epidermidis ATCC 12228 | 7.20 x 10 ⁵ | < 2.0 | 99.999 | > 5.56 Log ¹⁰ |
| Streptococcus pneumonia ATCC 6305 | 6.40 x 10 ⁵ | < 2.0 | > 99.999 | > 5.51 Log ¹⁰ |
| Streptococcus pyogenes ATCC 19615 | 1.77 x 10 ⁶ | < 2.0 | > 99.999 | > 5.90 Log ¹⁰ |
| Vibrio cholera ATCC 11623 | 4.70 x 10 ⁵ | < 2.0 | > 99.999 | > 5.40 Log ¹⁰ |
| Xanthomonas axonopodis ATCC 49118 (Citrus Canker) | 1.28 x 10 ⁶ | 3.6 x 10 ¹ | > 99.99 | 4.55 Log ¹⁰ |
| Yersinia enterocolitica ATCC 23715 | 2.23 x 10 ⁶ | 3.8 x 10 ¹ | 99.99 | 4.77 Log ¹⁰ |

Q What sizes are available?

- A**
- 50 mL (1.7 oz.) Personal Size: Approximately **120** uses per bottle and is TSA Compliant.
 - 210 mL (7.1 oz) Family/Group Size: Approximately **500** uses per bottle.
 - 1000 mL (33.8oz.) Wall Dispenser: Approximately **2400** uses per replaceable cartridge.

Q What are some key product features?

- A**
- More than 3 times yield over alcohol based gel sanitizers... **60+** Uses per ounce vs. 15 uses per ounce.
 - Non-Drying and Sting Free
 - Residual Efficacy
 - Non-Flammable
 - No-Drip Foam
 - Better Value

